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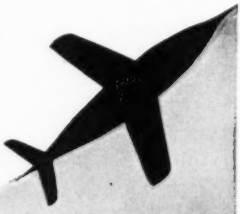

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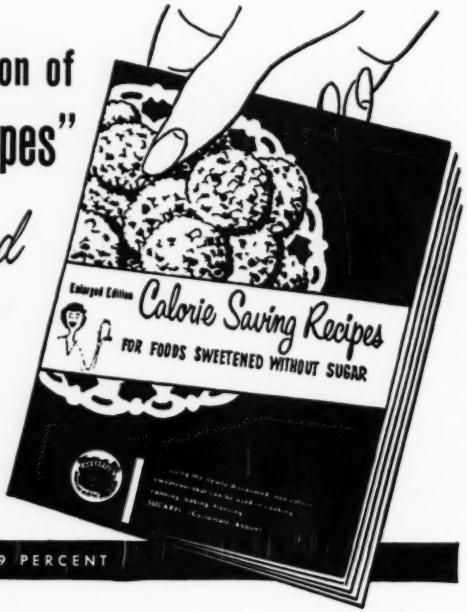

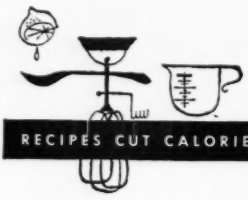

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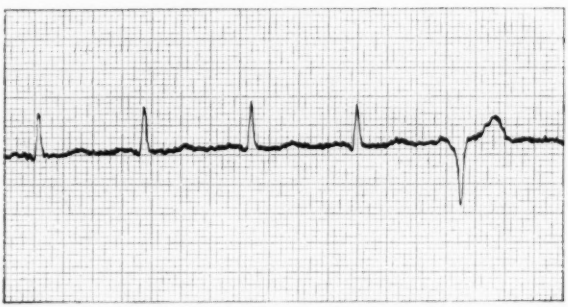
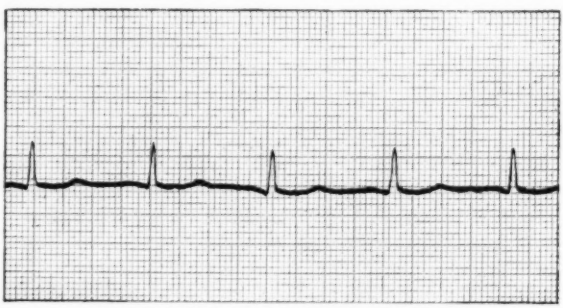


Lead I. Control tracing, ventricular premature contraction.



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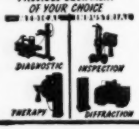

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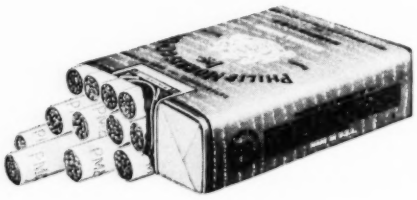

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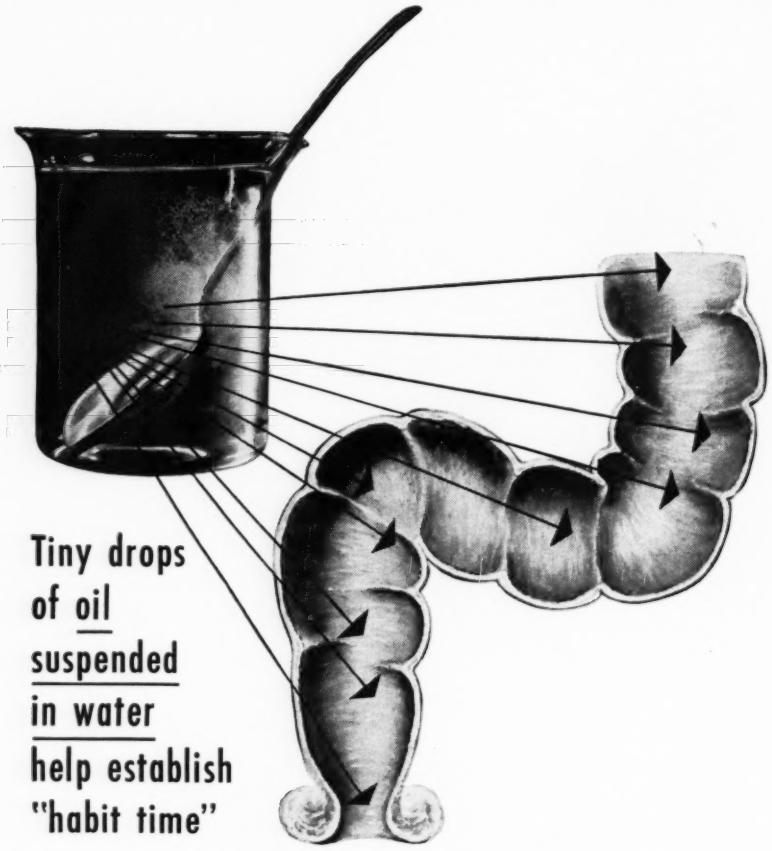

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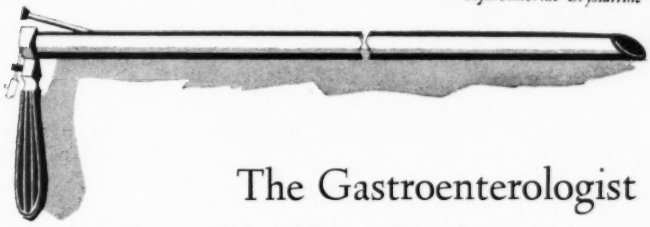

The Gastroenterologist

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Animal studies have forcefully demonstrated the adverse effect of inadequate protein nutrition on recovery processes.[1] Protein-depleted rats fed an adequate repletion ration manifest a rapid recovery of lost weight, of normal plasma protein and hemoglobin levels, of certain enzyme systems, and of normal capacity to synthesize antibody protein and to resist infection. On the other hand, reduction in the amount of but one essential amino acid in the repletion ration quickly causes loss of appetite, diminished food consumption, and inadequate weight recovery. This quick appearance of overt symptoms due to a shortage of an essential amino acid contrasts sharply with the delayed appearance of symptoms induced by deficient intake of any other essential nutrient.

These manifestations of acute amino acid deficiency noted in the rat can occur as readily in the normal human subject consuming a diet lacking in any one of the eight essential amino acids.[2] Loss of appetite and of body nitrogen accompanied by malaise quickly results. Furthermore, addition of the missing amino acid to the diet quickly restores the appetite, nitrogen equilibrium, and the previous state of health. Apparently, even in normal persons, lack of an amino acid in the diet partially or completely interrupts protein synthesis as well as increases tissue protein catabolism.[1] The conclusion is incontestable, therefore, that adequate protein nutrition is vital for speeding the processes of recovery from massive disease or major surgery.

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1. Cannon, P. R.: Recent Advances in Nutrition with Particular Reference to Protein Metabolism, Lawrence, Kansas, University of Kansas Press, 1950, pp. 56-60.

2. Rose, W. C.: The Nutritive Role of the Amino Acids, The Science of Nutrition, New York, The Nutrition Foundation, 1946.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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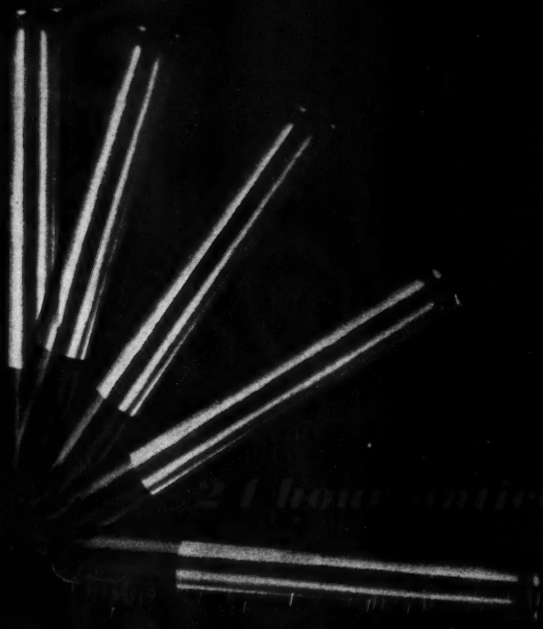

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1. Smith, William J.: Long-Acting Heparin Preparation: A Useful Adjunct to Anticoagulant Therapy. U. S. Armed Forces Med. J., Vol. II, No. 1, (Jan.) 1951.

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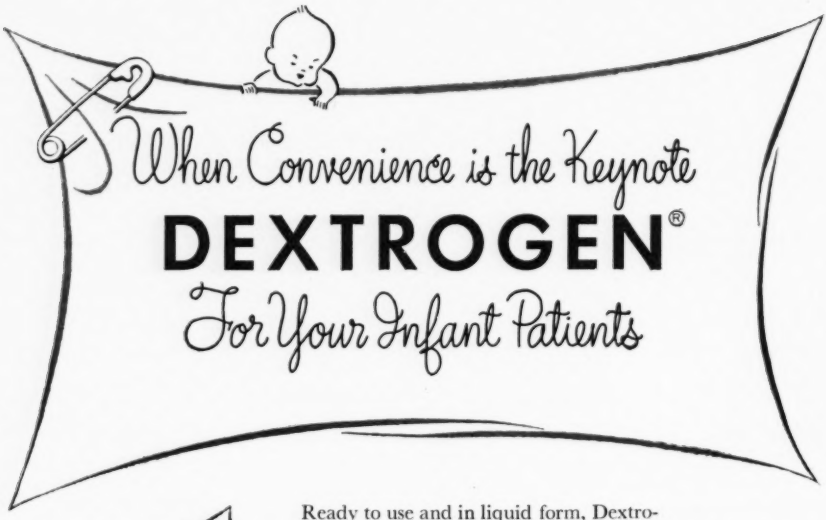

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Hamblen, E. C.: North Carolina M. J. 7:533 (Oct.) 1946.

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*Perloff, W. H.: Am. J. Obst. & Gynec. 58:684 (Oct.) 1949.

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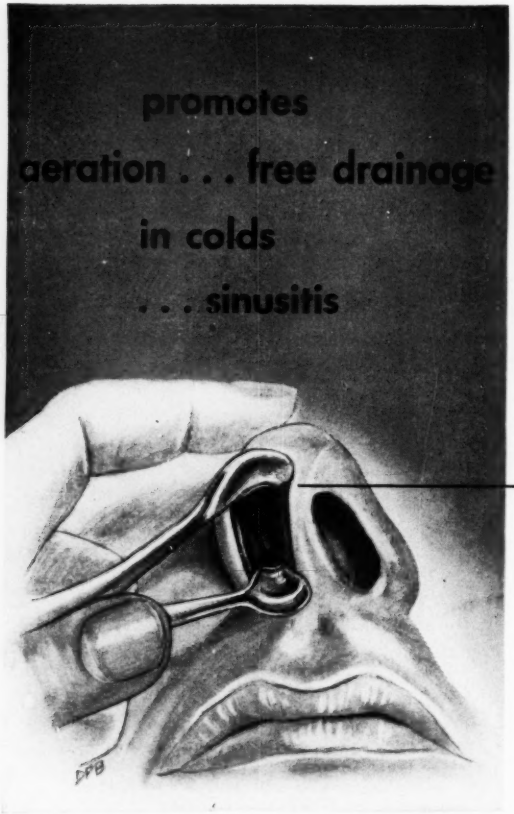
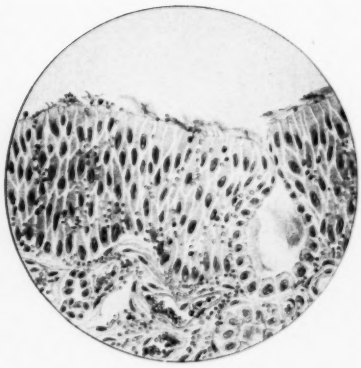
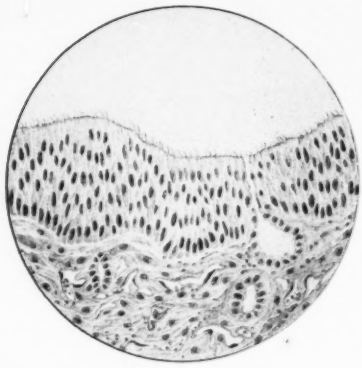




Nasal membrane showing increased leukocytes with denudation of cilia.

Normal appearing nasal epithelium.



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THE OFFICE MANAGEMENT OF DIABETES*

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Definition. Diabetes mellitus is a syndrome characterized by a quantitative impairment of carbohydrate metabolism. The degree of this impairment varies widely from patient to patient. In some the impairment is so slight that it can be detected only by glucose tolerance tests, while in others the inability to metabolize carbyhydrate becomes almost "total."

Etiology. The causes of diabetes mellitus are multiple. In somewhat less than half of the patients there is, at autopsy, a demonstrable organic disease of the pancreas. This usually takes the form of a hyaline fibrosis of the Islands of Langerhans, but patients whose pancreas has been destroyed by neoplasm, hemochromatosis, recurrent infection, or surgical intervention may develop the disease. In many patients no lesion in the pancreas can be demonstrated. The disease in some of these cases is apparently due to a hyperfunction of the anterior pituitary gland with an excessive secretion of the "diabetogenic hormone."

Heredity plays an important part in creating the substrata upon which the actual symptom complex may develop. This characteristic is apparently transmitted as a Mendelian recessive character and a familial history of diabetes can be demonstrated in about forty percent of patients suffering from the disease.

Frequently there seems to be a precipitating cause which brings to the clinical horizon the previously undetected disorder. Among such precipitating causes any change which increases the total metabolism of the body (except physical exercise), such as febrile infection, thyrotoxicosis, pregnancy, or obesity must be considered.

A syndrome which is difficult to distinguish from diabetes mellitus may develop in patients with organic disease of the liver: Laennec's cirrhosis, or fatty infiltration.

The abnormal physiology of the disease is apparently made up of many factors. There is an increased production of carbohydrate from protein catabolism as well as a decreased ability to store glycogen. In addition, the ability of tissue cells to utilize glucose is impaired. The exact action of insulin in combating this disorder is not entirely understood, but apparently it facilitates combustion of glucose by tissue cells, storage of glycogen, and perhaps it inhibits the formation of carbohydrate from protein sources.

Symptoms. The symptoms of diabetes vary depending upon the severity of the condition. Generally speaking, these symptoms will fall into three groups, which, for practical purposes, we will discuss separately.

1. Mild diabetes (glycosuria of obesity or "non-insulin requiring" diabetes). This disease is entirely limited to adults and is characterized by an insidious onset. The first symptom of which the patient is aware may frequently be the occurrence of some complication such as peripheral vascular failure with gangrene of the toe, cerebral thrombosis, myocardial infarction, diabetic retinitis, etc. These patients are always overweight and, even under the influence of their diabetes, they will not lose weight down to or below their ideal standard weight. However, in spite of a large appetite these obese patients may lose moderate amounts of weight as the amount of sugar excreted in the urine becomes excessive. Likewise there may be minor degrees of polydipsia and polyuria. It is not uncommon for this type of patient first to be discovered in the practice of a gynecologist, where they have gone for treatment of pruritis vulvae. The

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constant excretion of sugar-bearing urine provides an excellent medium for the growth of yeasts and these in turn set up a pruritic vaginitis. This type of disease may also be accompanied by a sense of general weakness, morning headache, lack of pep, and "sluggishness." Clinical acidosis does not occur in these patients except in the presence of some complicating factor such as febrile infection, thyrotoxicosis, pregnancy, etc.

2. Moderately severe diabetes (stable, insulin requiring diabetes). This disease occurs in adults, usually manifesting itself between the third and fifth decades. Here the classical symptoms of diabetes occur; namely, polydypsia, polyphagia, polyuria, and weight loss. This type of patient, if the diabetes is allowed to continue uncontrolled, will lose weight below his ideal standard weight under the influence of his diabetes, even though his caloric intake may be excessive. Again, however, the development of symptoms is quite insidious. Thus there may be a more or less gradual loss of weight without other symptoms over a period of some months before the situation is brought to the attention of a physician. Occasionally in this type of patient also the first medical consultation may be sought because of a complicating factor such as gangrene.

3. Severe diabetes (juvenile diabetes, unstable insulin requiring diabetes). This disease may occur either in adults or children, but practically all children who have diabetes fall into this group. It is characterized by a rapid and dramatic onset of symptoms with polydypsia, polyuria, polyphagia, and extreme weight loss. It is not unusual for patients suffering from this condition to lose weight at the rate of three to five pounds per week. If help is not sought promptly acidosis will occur rapidly and it is not unusual for these patients first to come to the attention of a physician when acidosis is already well established. It is likewise characteristic of this condition that, once a program of regulation has become established, strict adherence to the program is absolutely essential. Minor variations in insulin dose or in food intake produce dramatic changes in the carbohydrate metabolism.

Physical Findings. There are no pathognomonic physical signs of uncomplicated diabetes mellitus. However, evidences of premature arteriosclerosis, the typical funduscopic picture of diabetic retinitis, premature cataracts, and excessive obesity are indications for laboratory study of the carbohydrate metabolism. In the differentiation among the three different types of diabetes mentioned above the physical habitus of the patient may be quite helpful. Thus the mild diabetic is always overweight and is usually beyond the third decade of life. The severe diabetic has usually lost large amounts of weight in the immediate past and may show signs of dehydration and vitamin deficiency in addition to the general malnutrition. These patients likewise are almost always in a younger age group.

Diagnosis. Analysis of the urine for sugar should be part of the routine workup of every medical patient. Frequently diabetes, especially of the mild type, may be symptomless or at least give no *specific* symptom for many months or years. It is quite common for the discovery of this illness to be made entirely by accident during routine examinations. In this mild type of diabetes it is quite common for the urine to be free of sugar during the post-absorptive state, and it is therefore wise to collect specimens for this purpose late in the evening after a day during which the diet has been high in carbohydrate. The moderately severe and severe diabetic patients will show glycosuria throughout the twenty-four hour period so that this precaution is not as important here.

The reduction of Benedict's solution is not in itself pathognomonic for diabetes mellitus since the following conditions may also cause it:

1. *Renal glycosuria.* Glomerular urine normally contains sugar in exactly the same way as it contains all other dialyzable substances found in the blood plasma. In normal people, however, this glucose is reabsorbed as the urine passes down the tubule so that no sugar appears in the bladder urine. In some people the ability of the tubules to reabsorb glucose is distinctly impaired and in these persons, even though the amount of sugar in the blood is not excessive, sugar may appear in the urine.

2. *Alimentary glycosuria.* In this condi-

tion sugar appears in the urine after the excessive ingestion of carbohydrate. In this situation the amount of sugar appearing in the glomerular urine is more than can be reabsorbed by the tubules and therefore some of it is still present at the time the urine reaches the bladder.

3. *Emotional glycosuria.* The exact mechanism of this is not entirely understood but it is quite possible that under the influence of excitement sufficient epinephrine is released into the blood to increase the rate of glycogenolysis thus elevating the blood sugar temporarily.

4. *Lactosuria.* During *lactation* it is not uncommon for sufficient amounts of lactose to be excreted in the urine to produce a positive Benedict's test. However lactose is not fermented by yeast so that the Benedict reaction will be positive both before and after such fermentation has taken place. If the sugar is glucose the test will be positive before fermentation with yeast but negative afterward.

In order to differentiate among these causes of glycosuria blood studies are essential. In the more severe cases a single blood sugar may suffice to clinch the diagnosis. Thus if the blood sugar level is over 200 mgm. per cent and the patient has been without food for ten hours, the diagnosis of diabetes mellitus is practically certain. Hyperglycemia of this degree may occasionally be seen due to cerebral damage. However there are many patients in whom the impairment of carbohydrate metabolism is of lesser degree so that the blood sugar may approach normal when the patient has been without food. In these patients a glucose tolerance test may be necessary in order to establish the diagnosis.

Since it is well known that the diet during the days immediately preceding the glucose tolerance test will effect the result, it is essential that the composition of this diet be standardized. It is our custom to have the patient eat 300 grams of carbohydrate, 100 grams of protein, and 100 grams of fat as a minimum daily diet for three days before the test is to be run.

The actual technique of the standard glucose tolerance test calls for the administration of 100 grams of glucose by mouth after a twelve hour fast. (In children this dose should be modified to 1.8 grams per kilogram of body weight). A sample of blood is drawn for the determination of fasting blood sugar and the glucose is then administered by mouth. Blood samples are then drawn at intervals of one half hour, one hour, two hours, and three hours. This number of samples is always sufficient for the accurate diagnosis of diabetes mellitus.

In the normal patient the fasting blood sugar level will always be between 60 and 120 mgm. per cent. At the end of one half hour this may rise to 150 to 180 mgm. per cent, and this level may be sustained at the one hour interval. However by two hours the blood sugar level will always have returned to a normal figure. If this has not occurred then the glucose tolerance is said to be decreased and at least some impairment of glucase metabolism is present. In the obese, mild, non-insulin requiring diabetic it is not uncommon for the fasting blood sugar to be within normal limits but there will always be some degree of delay in its return to normal. In the severe juvenile type of diabetic the fasting blood sugar will be elevated and there will be a continuous rise during the three hours after the administration of glucose. Urine specimens should be collected at the same intervals as the blood specimens are taken in order to evaluate the "renal threshold" of each patient. There may be transient episodes of glycosuria during the test even in the normal person and these represent the so-called alimentary glycosuria.

As a screening procedure a much simpler test is eminently satisfactory. Thus it is our custom to give the patients 100 grams of glucose in solution in the fasting state and then draw a blood sugar two hours later. If this specimen is below 130 mg.% the diagnosis of diabetes mellitus has been excluded. If it is above 130 mg.% a full scale glucose tolerance test is indicated. This eliminates three unnecessary blood sugar determinations and makes it reasonably practical to survey every new patient for the possibility of diabetes mellitus.

It should be re-emphasized that these tests will demonstrate whether or not there is a definite impairment of carbohydrate metabolism. However they should not be relied upon

entirely to determine the extent of that impairment. Thus the differentiation between mild, non-insulin requiring diabetes and the severe juvenile type should be made on clinical grounds rather than upon the basis of a glucose tolerance test. The history in reference to the degree of weight loss and the occurrence of the classical symptoms of polydypsia, polyuria, and polyphagia will be of more help in deciding the severity of the disease than the glucose tolerance test.

Treatment. The treatment of a patient with diabetes mellitus should be so designed that the following goals will be achieved:

1. *The body weight shall be normal.* For this purpose the tables of standard height, weight, and age should be used with the exception that patients over thirty-five years of age should maintain the weight given as standard for age thirty-five. Variations of ten per cent plus or minus may be allowed depending upon the body habitus.

2. *The fasting blood sugar level shall be normal.* This goal may occasionally be very difficult of achievement and some concessions may have to be made. In the patient who does not require insulin this rule must be strictly enforced. However in the patient who is taking moderate or large amounts of insulin and whose diabetes is unstable it may be preferable to allow the fasting blood sugar to be slightly above normal (150 mgm.%) in order to prevent the frequent hypoglycemic spells to which these patients are sometimes subject. This is especially important in the middle-aged person in whom arteriosclerosis has already begun to develop since the occurrence of hypoglycemia may produce dangerous vascular disorders in the brain and in the myocardium. However, with these exceptions, every effort should be made to maintain a normal fasting blood sugar level in order to prevent the increased tendency toward arteriosclerosis, the decreased resistance to infection, the tendency towards skin complications and diabetic retinitis which hyperglycemia produces.

3. *The urine throughout the day shall be sugar-free.* The same general consideration as pertained to the fasting blood sugar should be kept in mind here. If complete aglycosuria cannot be achieved without running the risk of hypoglycemia it may be permissible to allow small degrees of glycosuria. However this consideration should not relieve the physician of the responsibility of a conscientious attempt to maintain a sugar-free urine.

4. *Hypoglycemic spells must not occur.* The dangers of a single spell of hypoglycemia are mostly dependent upon the time and place of its occurrence. Thus, hypoglycemia occurring while the patient is driving a car may be fatal. Frequent episodes of hypoglycemia may well produce irreversible cerebral damage.

5. *There shall be no acetone in the urine.* There are no exceptions to this rule.

The Maintenance of Body Weight. The weight of the human body is a direct function of the caloric intake and the caloric needs. At any time that the caloric intake exceeds the daily rate of combustion the excess will be stored in the form of fat. At any time when the daily intake is not sufficient to meet the daily combustion the difference will be made up by the metabolism of previously stored fat. This is a hard and fast rule which is based on the incontrovertible law of the conservation of matter and the woesome tales of patients who claim to gain weight while eating nothing are not to be heeded. The accumulation of edema fluid, of course, may cause weight gain in the absence of fat storage. The basic rule is not changed by the occurrence of "glandular disturbances" although these may vary the caloric needs. Thus a patient suffering from hypothyroidism may need fewer calories to maintain his body weight than the normal person but if he reduces his intake correspondingly there will be no weight gain. Therefore the first factor in the control of the diabetic patient is the maintenance of a correct diet. The total caloric content of this diet should be such that the weight will be returned to normal as promptly as possible. If the patient is overweight the number of calories supplied daily should be less than the number consumed and, conversely, the underweight patient should receive calories in excess of his daily consumption.

Extremely accurate estimates of the patient's caloric consumption each day are not necessary for this type of work. Certain relatively crude concepts of quantitative meta-

bolism therefore are sufficiently accurate for this purpose. Thus, for the adult it is a reasonable approximation of the truth to say that the daily combustion of calories at basal conditions is ten calories per pound of body weight. Additional allowances should be made for physical activities. Even when completely confined to bed the actual combustion will be approximately ten per cent over the basal figure increasing gradually to forty per cent for a person in a rather sedentary occupation and on up to two hundred fifty per cent for the extremely active male doing heavy physical labor. Having determined the caloric requirement to maintain the patient's present weight, calories are then added or subtracted in order to return the weight to normal.

Thus a one hundred eighty pound man, aged thirty, who is six feet tall, is practically at his ideal body weight. In order to maintain this weight he would require eighteen hundred calories at basal conditions plus a forty per cent allotment for sedentary activity (720 calories). In this way it can be seen that a total daily intake of twenty-five hundred and twenty calories will approximately maintain his present weight. Subsequent variations in the direction of increase or decrease can be made after a trial period has demonstrated whether or not this amount is exactly correct. Similarly, a one hundred eighty pound man, aged thirty, who is only five feet four inches tall would have an ideal body weight of approximately one hundred forty pounds. The number of calories necessary to maintain his ideal weight, one hundred forty pounds, would be fourteen hundred plus five hundred sixty for his moderate physical activity. Thus, nineteen hundred and sixty calories would maintain his weight at one hundred forty. However, since his weight at present is one hundred eighty pounds he will be burning calories at the rate of twenty five hundred and twenty per day. If we feed him only nineteen hundred and sixty calories he will lose weight at the rate of five hundred sixty calories per day. Since each gram of fat supplies nine calories it can be seen that he will lose approximately sixty-two grams of fat each day. However, on such a program, as his weight decreases, his rate of weight loss will also decrease until, when he approaches that weight which can be maintained by the diet he is consuming, weight loss will no longer take place. Thus as we will see below, the caloric content for diets for obese people should usually be somewhat less than that required to maintain even their ideal body weight.

Once the total caloric content of the diet has been decided upon its division as to carbohydrate, protein, and fat content must be considered. Generally speaking the diabetic who is to be treated without insulin (mild, obese) should be given a low carbohydrate diet (125 to 175 grams daily) while the patient who is to receive insulin should receive as high a carbohydrate diet as is compatible with his total daily caloric allotment. The minimum daily protein requirement for adults is one gram per kilogram of body weight daily but no adult, no matter how light in weight, should receive less than seventy grams per day. Generally speaking the modern tendency is to prescribe diets with more liberal protein allotments, such as one and a quarter to one and a half grams per kilogram of body weight. The fat content of the diet should be sufficient to make up the total calories required.

Thus, in the patient mentioned above, who weighed one hundred eighty pounds, and was 64 inches tall, the prescription should read something as follows: Carbohydrate 150 grams daily, protein 90 grams daily, fat 30 grams daily, with a total caloric value of 1230 calories. This total caloric value is less than nineteen hundred and sixty which would maintain him at his ideal weight of one hundred forty pounds. Since the carbohydrate and protein intake is determined by body requirements of protein and tolerance to glucose, the only additional food which could be given to such a patient in order to give him more calories would be fat thus raising the total content of the diet to approximately one hundred ten grams of fat. Since it makes no difference in general metabolism whether the fat which supplies the caloric need comes from the diet or from the storage depots of the body it should be obvious that it is just as well for the patient to burn his own body fat as to increase his ingestion of that substance. The general rule "Don't feed fat to fat people" would seem to be valid in all such cases.

As the obese patient's weight returns towards normal, the caloric content of the diet can be increased to that amount which will be sufficient to maintain his weight at its ideal figure.

2. *Maintenance of normal fasting blood sugar.* The maintenance of a normal fasting blood sugar is usually easy in the obese, mild diabetic patient who follows a reduction diet. Under these circumstances the post-absorptive blood sugar level will return to normal within a week to ten days even though the body weight has not yet completed its reversion to the ideal. As long as the patient remains obese there may continue to be a tendency to post-prandial hyperglycemia and glycosuria but when the weight has become normal this tendency will disappear in most cases so that the patient may then return to a more or less "free" diet as far as his carbohydrate, protein, and fat proportions are concerned, *provided that the caloric intake is not excessive.*

If, on the basis of the history, it is obvious that the patient cannot maintain his ideal

body weight without the administration of insulin the amount of insulin given, and its type, should be regulated according to the level of the blood sugar throughout the day. This will be discussed in a subsequent paragraph.

3. *Prevention of Glycosuria.* Glycosuria in the diabetic patient who is on a standard program of insulin can usually be prevented either by reducing the amount of readily available carbohydrates in the feeding which immediately precedes the occurrence of glycosuria or by the administration of rapidly acting insulin immediately before that meal. Specific indications will be discussed under a subsequent heading.

4. *Prevention of Hypoglycemia.* Hypoglycemic spells do not occur in the diabetic who is not taking insulin. One need not be concerned about this possibility in the mild, obese, non-insulin requiring diabetic who is being controlled by diet alone. The time of occurrence of hypoglycemia is extremely important since it varies directly with the type of insulin which is being used. Thus in a patient who is taking protamine zinc insulin in a single dose before breakfast, the greatest tendency towards hypoglycemia will be during the early morning hours between midnight and breakfast. In the patient who is taking globin insulin the greatest tendency towards hypoglycemia will be between lunch and supper, usually around four P. M. If gypoglycemia occurs following a single dose of regular or crystalline insulin this episode will take place within six to eight hours after the injection. In the patient whose fasting blood sugar is normal and whose urine is free of sugar it is frequently helpful to test the blood sugar at different times throughout the day in order to be forewarned of the possible occurrence of hypoglycemia. In patients whose meals are necessarily far apart (more than five hours) it is usually wise to add a small feeding midway between the two meals in order to prevent hypoglycemia. This feeding may consist of a glass of milk or a small serving of fruit.

5. *Prevention of Ketonuria.* Since ketonuria develops only when the combustion of fat is excessive an increase in the rate of carbohydrate combustion will relieve it. Even small degrees of ketonuria should not be tolerated. Thus in the obese patient who is on a drastic reduction diet there may be small amounts of acetone in the urine during the first week or two of the program. If this occurs a small amount of extra carbohydrate should be added to the diet. In the diabetic patient who is taking insulin, if the four criteria listed above are being met, it is most unlikely that acetone will appear in the urine. However if ketonuria does develop the amount of insulin being administered must be increased and, if necessary, additional carbohydrate may be required as well.

Office Management of the Uncomplicated Diabetic Patient. The office management of the diabetic patient depends entirely upon the accumulation of sufficient pertinent data upon which to base a rational program. Once the data have been accumulated a sensible program can readily be outlined if the criteria of good control mentioned previously are kept in mind.

The minimum necessary data consist of:

1. Fasting blood sugar level.
2. Urinalysis of fractional specimens collected approximately three hours after each meal and upon arising in the morning.
3. Body weight.
4. History relative to hypoglycemia.
5. A knowledge of the preceding insulin dose.

It is likewise essential that the physician have a complete understanding of the mode of action of the different types of insulin. Thus protamine zinc insulin is a delayed type of insulin exerting its main blood sugar lowering effect between 6 and 26 hours after administration. Globin insulin has a range of 1 to 20 hours, and regular or crystalline insulin from ½ to 8 hours. N. P. H. resembles glubin very closely.

The accompanying charts of actual cases of each of the three main groups of diabetic patients illustrate how the data were accumulated and upon what basis the decisions were made.

FIGURE I

Age - 64
F. W. Height - 62½" Ideal Weight - 140
Weight - 180

Mild Diabetes **Obese**

Date	Wt.	Diet	FBS	7 A. M.	11 A. M.	4 P. M.	9 P. M.	Insulin	Hypoglyc.	Complications
6-12-45	180[1]	C-150 P-100[2] F-50	276	4+	4+	4+	4+	0[3]	0[4]	Arteriosclerosis[5]
6-21-45	180¼[6]	Urged to follow	270[7]	0[7]	0	0	0	0	0	
7-17-45	175¼[8]	O. K.	136[8]	0	0	0	0	0	0	
8- 7-45	171¼	Eating[9] raisins and Peaches	190[9]	0	0	0	0	0	0	
8-28-45	168¼[10]	On diet	124	0	0	0	0	0	0	
9-25-46	168[11]	Off diet	116	0	0	0	0	0	0	
10-23-45	166½[12]	Off diet	140	0	0	0	0	0	0	
11-20-45	168[13]	Off diet	190	0	0	0	0	0	0	
1-15-46	159¾[14]	On diet	136	0	0	0	0	0	0	
4-16-46	157[15]	Fairly[16] careful	120	0	0	0	0	0	0	

CASE I

1. The weight of 180 pounds is approximately 40 pounds overweight. The hyperglycemia has been discovered accidentally during an insurance examination. There is no history of polydipsia or polyuria. There has been a history of very gradual weight loss from 223 pounds to the present weight of 180.

2. The diet is low in carbohydrate, adequate in protein, and low in calories (1450). The 50 gram allotment of fat is allowed because it is very difficult to consume 100 grams of protein daily without getting about 50 grams of fat.

3. The patient is given no insulin because he obviously is a mild, non-insulin requiring diabetic.

4. Hypoglycemia will not occur since the patient is taking no insulin.

5. The arteriosclerosis present is somewhat more than is seen in the average patient of age 64. This is very common in the mild diabetic, presumably because the disease has existed for a long time before it is discovered.

6. Patient returns after ten days and it is obvious that he has not been following the diet since he has gained weight.

7. The fasting blood sugar remains elevated but the urine is now free of sugar suggesting that he has at least limited his consumption of carbohydrate food somewhat.

8. The patient returns now after three weeks during which he has lost weight approximately at the predicted rate and the fasting blood sugar is now only very slightly elevated. The urine remains free of sugar and the patient feels much better.

9. Three weeks later the patient returns still losing weight but less rapidly than before. He admits to having eaten a large quantity of raisins and peaches during the week preceding his visit and as a consequence his blood sugar is now elevated. His consumption of these fruits was not sufficient to stop his weight loss entirely but it did produce hyperglycemia. The fact that no sugar appears in the urine suggests that the "renal threshold" is quite high. This is also illustrated by the absence of glycosuria when his blood sugar was 270 mgm.% on June 21st.

10. Three weeks later his weight loss has continued at a fairly satisfactory rate and his blood sugar and urine are now normal.

11. On September 25th he has lost no weight and it is obvious that he has not been following his diet. In spite of this his blood sugar is now normal. It can be deduced that his tolerance to glucose has been sufficiently increased by his twelve pound weight loss during the preceding three months so that even though his food intake is now excessive the blood sugar does not rise as it did previously.

12. On October 23rd the weight loss continues but very slowly proving that he has not followed his diet accurately, but again the blood sugar remains near normal.

13. After a period of four weeks, during which he has gained weight again the blood sugar is now elevated but the urine remains free.

14. A period of conscientious observation of the diet is followed by prompt return of all the figures to normal.

15. Gradual weight loss continues but it is obvious that he is not rigidly adhering to his diet. In spite of this his glucose tolerance has sufficiently improved so that his blood and urine sugar findings remain normal.

16. Having lost 23 pounds in weight it is obvious that if this weight loss will continue until he reaches his ideal standard weight of 140 pounds his glucose tolerance will improve sufficiently so that he can eat a normal diet provided that it is low enough in calories to avoid further weight gain.

FIGURE 2

Age - 34
H. M. S. Height - 69½" Ideal Wt. - 160
Weight - 159

Moderately Severe (Stable, Insulin Requiring)

Date	Wt.	Diet	FBS	7 A. M.	11 A. M.	4 P. M.	9 P. M.	Insulin	Hypogl.	Comment
2- 3-46	195[1]	C-280[2] P-110 F-95	345	S-4+ A-2+	S-4+ A-2+	S-4+ A-2+	S-4+ A-2+	10-P. Z. I.[3] 10-Globin	0	Pilonidal sinus (Clean) Acetonuria - 2+[4]
2- 6-46[5]	163[6]	Carefully followed	280[7]	S-4[8] A-1	S-4 A-1	S-4 A-1	S-4 A-1	15-P. Z. I.[9] 15-Globin		Nocturia ceased
2-19-46	164[10]	Carefully followed	280[11]	S-4 A-0	S-4 A-0	S-3 A-0	S-4 A-0	25-P. Z. I. 10-Globin		
2-23-46	167½	Reduce[13] h. s. snack	224[12]	S-4 A-0	3	0	0	30-P. Z. I. 0-Globin	5:30 P. M.	
3- 2-46	165	Add[15] milk 3:30 P. M. 10 A. M.	160[14]	S-0	S-0	0	0	28-P. Z. I.	9:30 A. M. 10 A. M. 4 P. M.	
3-23-46	169½	Stop n. s.[16] milk. Stop bread, butter, cream	190	0	0	0	0	28-P. Z. I.	0	
4-13-46	171	Stop bed-[17] time snack altogether	170	0	1	0	0	25-P. Z. I.	Very slight 11 A. M.	
4-29-46	170	Change[18] all milk to skim	140	0	0	0	0	25-P. Z. I.	0	
5-14-46	170[19]	Same	114	0	0	0	0	25-P. Z. I.	0	

CASE 2

1. This patient weighed 224 pounds in February of 1944, at which time his urine showed no sugar. This urinalysis was done because his mother had recently died "of diabetes." He followed a strict diet for approximately one year and lost 70 pounds. However since stopping the special diet his weight has continued down to its present level of 159 and during the past two months he has complained of thirst, polyuria, nocturia, and general fatigue. He has been urinating from 10 to 16 times a night during the past two weeks.

2. The rapid weight loss and polyuria and polydipsia immediately classified this patient as an "insulin-requiring" diabetic. He is therefore allowed a high carbohydrate diet with an adequate protein allotment and calories sufficient to maintain his weight, which at present is approximately ideal. This diet is divided into three meals with one fifth of the total daily allotment at breakfast, two fifths at lunch and two fifths at supper. In addition he is allowed a "snack" consisting of a glass of milk and a slice of bread with butter at bedtime.

3. He is started on 10 units each of protamine zinc and globin insulin. It has been impossible in our experience to judge in advance which type of insulin will be best suited to the individual patient. We therefore have started some of our patients on combinations (separate injections) of protamine and globin and by subsequent alterations in the dose have been able to determine with a single program of standardization which type of insulin will be more suitable to the particular patient.

4. The presence of acetonuria is supportive evidence that this patient is an "insulin-requiring" diabetic since the mild, obese, diabetics rarely excrete acetone except in the presence of semi-starvation or some complication.

5. The patient returns after having taken insulin for two days. This interval is made short because of the danger of impending acidosis as shown by the presence of acetone in the urine.

6. In this short interval of 72 hours the patient has gained 4 pounds. This does not represent deposition of fat but rather the retention of fluid, as the patient corrected the dehydration which was present with the impending coma.

7. The blood sugar remains high and the urine is still "loaded" with sugar.

8. Acetone is still present, but is less in amount.

9. Since glycosuria is present throughout the day and the fasting blood sugar is still grossly elevated one cannot yet determine the time relationships of the insulin needs and therefore both the protamine and the globin doses are increased to 15 units.

10. Three days later the patient has gained 1 pound. This probably represents at least partly a storage of fat.

11. Blood sugar remains elevated but the acetone has now cleared from the urine. It is becoming apparent that the globin insulin is bringing the blood sugar lower during the mid-afternoon (4 P. M.) than at any other time during the night or forenoon.

12. The patient returns now with the blood sugar somewhat lower, the afternoon urine is free of sugar, and he complains of a slight hypoglycemic reaction just before supper. The globin insulin is therefore discontinued and the protamine increased to 30 units.

13. With the tendency to excessive weight gain and hyperglycemia during the night, the bedtime snack is discontinued.

14. The blood sugar is now approaching normal and the urine is free of glucose. However insulin reactions are occurring at various times throughout the day. This is not uncommon during the first few weeks during which a diabetic patient is under control since, under the influence of adequate control, the tolerance to glucose tends to improve rather dramatically during the first several weeks and it is necessary to reduce the insulin in order to keep ahead of this trend.

15. In view of the loss of a small amount of weight and the frequent reactions, a glass of milk is added to the diet in the middle of the morning and in the middle of the afternoon.

16. The excessive weight gain continues and the fasting blood sugar remains high. The diet is therefore altered by reducing the evening meal.

17. The weight is still increasing beyond the ideal. The fasting blood sugar remains elevated but he has had several very slight spells of hypoglycemia at approximately 11 A. M. The insulin is therefore reduced to prevent these hypoglycemic spells, and the "bedtime snack" is discontinued altogether in an effort to restore the fasting blood sugar to normal as well as to prevent further weight gain.

18. The patient now is no longer gaining weight, his blood sugar is practically normal, and the urine is free of sugar. In order to continue this favorable trend, all of the milk in his diet is now changed to skim milk to reduce its caloric content without materially effecting its protein or carbohydrate composition. The insulin dose of 25 units of protamine zinc insulin is continued.

19. The patient now fulfills all the criteria of good control.

FIGURE 3 **J. S.** **Age 18** **Height: 69"** **Ideal Wt. - 150** **Weight: 140**

Severe Unstable Diabetes

Date	Wt.	Diet	FBS	7 A. M.	11 A. M.	4 P. M.	9 P. M.	Insulin	Hypogl.	Comment
5- 3-43	140	C-175[1] P-80 F-80	120[2]	0	Tr.	Tr.	1	P. Z. I.-5 at bedtime	0	Polydipsia. Polyuria, Weight loss
5-13-43	143[4]	C-250[3] P-125 F-100	122	0	0	Tr.	Tr.	P. Z. I.-5 before breakfast		
5-27-43	140¼[5]	Same	108	0	0	0	1	P. Z. I.-7		
6-17-43	137[6]	Same	190	4 Acetone+	4	4	4	P. Z. I.-8		
6-24-43	136[7]	Same	180	4 Acetone 0	4	4	4	P. Z. I.-16[7]		
7- 1-43	135½[8]	Same	190	4 Acetone 0	4	4	4	P. Z. I.-22		
7- 5-43	139½[9]	Same	84	0	4[10]	0	0	P. Z. I.-35		
7-22-43	139	Same	94	4	0	2	4	P. Z. I.-35 Reg.-5		
8-13-43	142[12]	Same	96	0	0	4	4	P. Z. I.-30[11] Reg.-5-0-5		
8-25-43	145[13]	Stop bread supper & breakfast	100	1	2	Tr.	4	P. Z. I.-32 Reg.-5-5-0		
9- 9-43	148[14]	Same	112	0	0	0	0	P. Z. I.-32 Reg.-5-0-0-0		

CASE 3

1. This young boy with severe, unstable, diabetes had been losing weight from 160 to 135 pounds for two years. He had been treated elsewhere with this diet which has the fault of being too low in carbohydrate and too low in calories.

2. In spite of the fact that his blood sugar is near normal and his urine contains only small amounts of sugar, this patient cannot be said to be well controlled since his weight is below normal.

3. The diet therefore is changed to this formula and the insulin given in the morning before breakfast.

4. On this program he gains weight and the blood sugar remains normal Very slight glycosuria continues. In an effort to control the afternoon and evening glycosuria the insulin is increased to 7 units.

5. In spite of the increase in diet and insulin the patient has again lost weight which is difficult to explain since the fasting blood sugar remained normal and the urine is still practically free of sugar. However, subsequent events suggest that this may have been a warning of an impending increase in the severity of his disease.

6. In three weeks there has been three pounds weight loss the blood sugar is now elevated and the urine is full of sugar and shows a small amount of acetone. In addition the patient complains of polyuria and polydipsia.

7. Even with the insulin dose doubled to 16 units the weight loss continues and glycosuria is constant. The blood sugar remains elevated. The insulin dose is therefore further increased to 22 units.

8. This slight increase in insulin dose has affected the blood sugar and urine sugar not at all and the weight loss continues. It therefore is obvious that the patient's diabetes has become much more severe and larger doses of insulin will be necessary to control it. It therefore is increased to 35 units.

9. Over a period of four days he immediately gains weight the fasting blood sugar returns to normal and the urinary picture is much improved.

10. Because of the occurrence of glycosuria after breakfast a small amount of regular insulin is added to the program in a separate injection before breakfast. This is done without lowering the amount of protamine zinc insulin since the dose of regular insulin before breakfast will not appreciably effect the fasting blood sugar.

11. The patient now returns with a normal fasting blood sugar but spilling sugar into the urine in midafternoon, evening, and apparently during the night. Since the fasting blood sugar is normal most of the glycosuria in the 7 A. M. specimen must have accumulated early in the evening following supper. A small dose of crystalline insulin (5 units) is therefore added to the program before supper.

12. Control is now improving and the weight gain is gratifying. The fasting blood sugar is normal but the patient continues to spill after lunch and after supper. In an effort to control this the five units which had been being given before supper is moved up to the noontime dose. Since this will reduce somewhat the insulin activity during the night the dose of protamine is increased slightly to make up for this change.

13. The rate of weight gain is now excessive and since the urine contains sugar after breakfast and after supper those two meals are reduced. In addition the noontime dose of regular insulin is dispensed with.

14. The patient is now at or near his ideal body weight and fulfills all of the other criteria of good control.

It must be remembered in handling any patient suffering from diabetes mellitus that this condition is probably more variable from one patient to another than any other problem with which the physician is faced. It therefore is impossible to set up any rigid set of rules for handling each patient. If the physician is aware of the basic metabolic defects, the result he is trying to achieve, and the methods of treatment available to him, there is no reason that each of these patients cannot be well controlled. Of course there are patients who refuse to follow instructions and the power to control these is not within the strength of the individual physician. Despite the fact that hard and fast rules are impractical a repetition of the following broad statement may summarize the general attitude to be adopted toward these diabetic patients:

(1) The grossly overweight patient who has not lost weight or suffered from polydipsia or polyuria before the diagnosis of diabetes has been made should be treated without insulin except during the period of some complication.

(2) The criteria of good control are that the body weight shall be normal, fasting blood sugar shall be normal, glycosuria shall not occur throughout the day and there shall be neither ketosis nor hypoglycemia.

(3) The patient who has lost weight below his ideal standard weight under the influence of his diabetes usually will require insulin for his control.

(4) The patients who are receiving insulin should be treated with high carbohydrate diets (250 to 400 grams daily).

(5) The patients who are not receiving insulin should be treated with low carbohydrate diets, 125-175 grams daily).

(6) The speed and duration of activity of the four types of insulin now available must be kept in mind. No one of them is suitable for the treatment of all patients but an intelligent concept as to their individual characteristics will readily demonstrate which patients will receive most benefit from which type of insulin.

Insulin Mixtures. A few patients can be controlled best on mixtures of protamine zinc and regular (or crystalline) insulin or mixtures of N.P.H. and regular. The exact proportion of these mixtures varies from patient to patient but the great majority do best on a proportion consisting of two parts of regular or crystallin insulin mixed with one part of protamine zinc insulin. In N.P.H.—regular mixtures any proportion which "works" will be satisfactory. These mixtures are usually most suitable for those patients who, although the fasting blood sugar is normal on a single dose of protamine zinc or N.P.H.

continue to have glycosuria during the day. Although this type of patient can sometimes be controlled by the use of globin insulin there are some where an adequate amount of globin insulin either produces hypoglycemia during the day or fails to control the fasting blood sugar during the night. Thus if a patient is able to control his fasting blood sugar with a dose of 40 units of protamine zinc insulin for example, but continues to spill moderate amounts of sugar during the day, a good starting point in beginning treatment with a mixture would be to mix 30 units of crystalline insulin and 15 units of protamine zinc insulin in the syringe and administer this each morning before breakfast. Subsequent study of the fractional urinalyses throughout the day and the fasting blood sugar in the morning will give the indications for appropriate alterations in this mixture. Thus if the fasting blood sugar remains normal but glycosuria continues during the day the amount of regular insulin in the mixture should be increased and the amount of protamine slightly decreased. On the other hand if the blood sugar in the morning before eating is elevated but the urines throughout the day are relatively clear the amount of protamine should be increased while the regular is decreased. It should be emphasized that the two to one ratio of regular insulin to protamine is a good starting point, but that variations in this ratio are the rule rather than the exception.

Hypoglycemia. We will restrict our discussion of hypoglycemia here to those episodes which occur in the diabetic patient who is taking insulin. Spontaneous hypoglycemia has been adequately dealt with by others.

The diabetic patient who is taking insulin for the control of his disease may be subject to hypoglycemia either due to an error in his insulin dose, excessive exercise during a period when the insulin he has taken is active, or the deficient ingestion of food. Likewise the disappearance of some previously existing complication which was increasing his insulin requirement may produce hypoglycemia unless the insulin dose is decreased in time.

Hypoglycemia due to regular insulin almost always occurs within six hours after the administration of the offending dose. When hypoglycemia occurs in the patient taking globin insulin it is most likely to occur within six to twelve hours after the injection, while the patient taking protamine zinc insulin is most likely to suffer from hypoglycemia from twelve to twenty hours after its administration.

Symptoms: The symptoms of hypoglycemia are extremely variable in different patients but are frequently quite constant in repeated occurrences to the same patient. The initial warning usually takes the form of hunger, nervousness, or headache. This may be followed within a period of a very few minutes by excessive perspiration, trembling, slurring of the speech, blurring of the vision, mental confusion, disorientation and finally loss of consciousness. There may or may not be clonic or tonic convulsions. The length of time from the first warning to loss of consciousness varies from a few minutes to a half hour or more.

Physical Findings: The patient in hypoglycemia is usually pale and his skin is cold and moist. His temperature may be subnormal. The pulse and respirations are normal. The pupils may be slightly dilated and nystagmus sometimes occurs. There is no specific odor to the breath. Blood pressure is normal, the heart, lungs and abdomen show no specific findings. There may be transient changes in the reflexes and abnormal plantar response or a positive Hoffman's sign may exist. There frequently is excessive salivation and if convulsions have occurred the patient may bite his tongue or froth at the mouth. We have seen patients in tonic opisthotonus due to hypoglycemia.

Laboratory Findings: If time is taken for a determination of the level of sugar in the blood the results will almost always be below 50 milligrams per cent. This level again varies remarkably from patient to patient, but usually the same patient will develop symptoms at about the same level. Likewise the level at which symptoms tend to occur is somewhat lower when the hypoglycemia is produced by slow acting insulin than it is when the rapid acting insulin is being used. There will be no acetone in the urine but it must be remembered that the bladder urine may contain sugar. This is so because sugar may have been passed into the bladder some hours before the

hypoglycemia occurred. However if the bladder is emptied and a freshly secreted specimen of urine collected it will be free of sugar. The leukocyte count will be normal. The diagnosis of hypoglycemia is usually so obvious from the history and physical findings that these laboratory studies are not required.

Treatment: All diabetic patients who are taking insulin should carry readily available carbohydrate in some form on their person at all times. At the first warning of hypoglycemia they should, without hesitation, take some of this carbohydrate by mouth. The patient should be told not to procrastinate in this matter since, within a very few minutes after the first warning, his mental processes become so clouded that he is no longer capable of good judgment. Likewise it should be remembered that the ingestion of a small amount of carbohydrate will not do the diabetic patient any permanent harm even if his fear that he is developing hypoglycemia is unwarranted. Every diabetic patient who is taking insulin should carry upon him some form of identification with the information that he is diabetic, that he does take insulin, that if he is found unconscious or sick or irrational he should be given sugar. A metal wrist band is excellent for this purpose.

If these measures are not undertaken in time and the hypoglycemia progresses to the stage of unconsciousness the ideal treatment is the intravenous injection of a sterile solution of 50% glucose in 15 to 25 cc. amounts. This should be given slowly through a small needle in order to avoid thrombosis of the veins. If the unconsciousness is due to hypoglycemia the patient will usually return to consciousness within a period of 20 minutes after the injection of 25 cc. of 50% glucose. If this does not occur then the unconsciousness is almost certainly due to something else. As soon as the patient has regained consciousness he should be instructed to eat a fair sized meal in order to prevent a recurrence. A subsequent discussion with the patient after he is feeling better will reveal the cause of the hypoglycemic shock.

If intravenous glucose solutions are not available and the patient is already unconscious the hypodermic use of epinephrine (one cc. of 1-1000) may occasionally be successful in arousing the patient long enough to permit the administration of carbohydrate by mouth. This is especially true if the hypoglycemia has been produced by regular or crystalline insulin since the liver stores of glycogen are relatively intact and the blood sugar level is not likely to be very low. If the hypoglycemia has been produced by protamine zinc or globin insulin there is a fair chance that this method will not be successful.

The administration of any appreciable amount of fluid or solid by mouth to the unconscious patient must not be undertaken. If necessary a gastric tube can be passed and orange juice, sugar, or glucose solution administered through the tube. In extreme emergency when none of these measures is possible sweet liquids can be dropped under the tongue with an eye-dropper but even this procedure may lead to aspiration of the fluid.

If the patient is subject to repeated episodes of hypoglycemia at any particular time of the day an additional feeding containing both carbohydrate and protein (milk is good for this purpose) should be given approximately one hour before the time of occurrence of the hypoglycemic spell.

Pregnancy in the Diabetic: Diabetic women are relatively infertile, presumably because of some variation in pituitary function, but the nature of this is not known. When they do become pregnant however, they present very special problems in management and extreme care on the part of both physician and patient is essential for the welfare of both mother and child.

It has long been believed that the diabetic mother was much more liable to complications during her pregnancy than the non-diabetic woman. It is our belief, however, that this increased liability towards complications can be prevented provided that rigid control of the diabetes thoughout the period of gestation can be maintained. The usual complications which occur are polyhydramnios, excessively large babies, stillbirth and toxemias of pregnancy. Even if it is true that these complications can be prevented by rigid control of the diabetes during pregnancy, the state of pregnancy itself makes the diabetes so unstable and difficult to manage that it is not unusual for complete control to be impossible. In these

patients, Joslin and White have shown that the occurrence of toxemia can frequently be predicted by a determination of the serum prolan level at the beginning of the third trimester of pregnancy. Their work has shown that if the serum prolan level is excessive, toxemia is very likely to develop and they have been able to prevent the occurrence of this complication in a significant number of patients by the administration of very large doses of estrogen (15 to 135 mgm. of stilbesterol daily).

The type of diet prescribed for the pregnant diabetic woman should be similar to that used at other times except that not uncommonly the obese, mild, non-insulin requiring diabetic woman may, during the term of her pregnancy, become sufficiently severe to require insulin. All of these diets should be high in protein (100 to 125 grams) and the caloric allotment should be carefully regulated to avoid excessive weight gain. If control of the diabetes is possible with the slow acting insulins this is permissible but not uncommonly it will be necessary to prescribe four equal feedings with four doses of crystalline insulin in exactly the same fashion as has been described for the treatment of infections. Frequently during the second and third trimesters there may be a reduction in the insulin requirement, presumably due to the fact that at this time the fetal pancreas begins to secrete insulin.

At the time of delivery the problem of maintaining the patient free of hypoglycemia and acidosis is exactly similar to the problem one faces when a surgical operation is necessary. During this time likewise, hyperglycemia can be allowed with impunity provided that acidosis is prevented.

The child born of a diabetic mother is not uncommonly subject to hypoglycemic spells during the first five to six days after delivery. This is presumably due to the fact that the fetal pancreas has become hyperactive in an effort to compensate for hyperglycemia in the placental blood. Theoretically this could be prevented provided the mother's diabetes was carefully controlled throughout her pregnancy. Such an infant should be fed frequently during the first five days with readily available carbohydrates. We recommend one ounce of 10% lactose by gavage tube every hour through the day and night for the first five days. Usually within this period the tendency toward hypoglycemia will disappear.

As soon as the pregnancy has been terminated the diet and insulin should be regulated in exactly the same fashion as would be done if this patient presented herself for standardization. However, the diet should be again liberal in protein and perhaps slightly high in its total caloric content if the mother is capable of feeding the infant at breast. These women usually cannot nurse their infants, again presumably due to pituitary dysfunction.

Diabetic Diets. The problem of diabetic diets is by no means as complicated as it would appear from a superficial acquaintance. The general principles are exactly similar to those upon which any healthful diet should be formulated with the exception that the obese, non-insulin requiring diabetic patient should be treated with a diet which is low not only in calories but also in carbohydrate. Such diets for the obese diabetic should usually contain not more than 150 grams of carbohydrate per day.

Caloric requirements for adults have already been described above, children have a relatively greater need for calories than adults. This is in part due to their growth requirements and in part due to their greater physical activity. The total allotment for children according to Rose should approximate the following figures:

Age in years	Calories per pound
Age 3 - 5	40 calories
" 6 - 9	35 "
" 10 - 13	30 "
" 14 - 15	25 "
" 16 - 17	25 "
" 18 - 18	23 "

2. *Protein Requirements* It has long been stated that the daily protein requirement for adults is one gram per kilogram of body weight but that no adult, no matter how small, should receive less than 70 grams of protein daily. The modern trend in dieteties is to prescribe more liberal allowances of protein so that in general we recommend about 1.25 grams of protein per kilogram of body weight per day, with a minimum allotment of 90 grams daily. Children should be allowed 2 to 3 grams of protein per kilogram of body weight each day.

3. *Carbohydrate Requirements* The patient who receives insulin should also receive a high carbohydrate diet (200 to 400 grams daily) but the patient who is not to receive insulin should receive 150 grams or less of carbohydrate per day. Probably no one should be given less than 125 grams of carbohydrate per day since this at least makes possible the occurrence of ketosis of starvation.

4. *Fat Requirement*: The only criterion for gauging the allotment of fat is the total number of calories desired in the diet. It is true that if the fat allowance is below approximately 50 grams daily there may well be danger of a deficiency of the fat soluble vitamins, A. and D. However, it is now so easy to replace this lack with supplementary vitamin prescriptions that it need not be a serious consideration.

5. *Mineral Requirement*: The requirements for minerals such as calcium and iron should constantly be kept in mind but most diabetic diets contain adequate amounts of milk, meat, and fresh vegetables so that there is a little danger of a deficiency of these elements. One quart of milk daily provides an adequate amount of calcium. If the patient is eating 90 grams of protein daily in the form of meat, eggs, and cheese, it is practically impossible for there to be a significant iron deficiency.

Actually the following diets, or a variation thereof will suffice in the control of the great majority of diabetic patients:

1. *For reduction in weight of the obese, non-insulin requiring diabetic.*

Carbohydrate 150—Protein 90—Fat 40.

DIET # 1

	Carbohydrate	Protein	Fat
BREAKFAST	30	18	8
Skim milk (260)	13.0	9.1	0
Bread, 1 slice (30)	15.7	2.6	0.6
1 egg	0.4	6.4	5.8
1 teaspoonful cream	0.24	0.17	1.2
Coffee	0	0	0
LUNCH & SUPPER (each)	60	36	16
Lean meat—3 ounces	0	16.2	15.2
10% vegetable (200)	18.6	2.4	0.6
10% fruit (120)	12.0	1.1	0.2
1 slice bread (30)	15.7	2.6	0.6
8 ounces skim milk (240)	12.0	8.4	0
Cottage cheese, ⅛ cup (30)	1.2	5.3	0.2

2. For maintenance in weight of the "non-insulin requiring" diabetic after his weight has been reduced to normal.

Carbohydrate 175—Protein 100—Fat 100

DIET # 2

	Carbohydrate	Protein	Fat
BREAKFAST	35	20	20
Egg — 1	0.4	6.4	5.8
1 cup skim milk (240)	12.0	8.4	0
1 slice bread (30)	15.7	2.6	0.6
10% fruit (50)	5.0	0	0
2 ounces light cream (30)	2.4	1.6	12.0
Butter ½ teaspoonful	0	0	2.0
Coffee	0	0	0
LUNCH & SUPPER (each)	70	40	40
8 ounces milk (240)	11.8	8.4	9.4
1 slice bread (30)	15.7	2.6	0.6
⅛ lb. meat (120)	0	23.2	15.6
8 ounces vegetable (240)	24.0	2.4	0.6
7 ounces fruit (200)	20.0	2.1	0.7
1 tablespoonful butter (15)	0	0	12.1

3. For maintenance in weight of insulin requiring, active, adult of 180 lbs. or for an active child of about 100 lbs.

Carbohydrate 350—Protein 100—Fat 100

DIET # 3

	Carbohydrate	Protein	Fat
BREAKFAST	70	20	20
Milk (240)	11.8	8.4	9.4
Bread (60)	31.4	5.2	1.2
Orange juice (270)	27.0	0	0
Egg	0	6.4	5.8
Butter (5.0)	0	0	4.0
LUNCH & SUPPER (each)	140	40	40
3 slices bread (60)	47.1	7.8	1.8
1 cup milk (240)	11.8	8.6	9.4
2 cups 10% vegetable (480)	48.0	4.5	1.2
1 2/5 cup 10% fruit (340)	34.0	0	0
4 ounces lean meat (120)	0	21.0	27.0

4. For maintenance in weight of insulin requiring, less active, or smaller (150 lbs.), adult, or for an active child of about 75 lbs.

Carbohydrate 250—Protein 100—Fat 60

DIET # 4

	Carbohydrate	Protein	Fat
BREAKFAST	45	19	5.2
1 egg	0	6.7	5.2
1 cup skim milk (240)	12	8	0
¾ cup 10% fruit (180)	18	2	0
1½ slices bread (45)	15.5	2.5	0
LUNCH & SUPPER (each)	105	39	26
3 oz. meat, fish, fowl, cheese or 3 eggs (90)	0	21	16
1 cup skim milk (240)	12	8	0
2/3 cup 10% fruit (160)	18	1	0
1¾ cup 10% vegetable (420)	44	4	0
2 slices bread (60)	31	5	0
2 teaspoons butter (10)	0	0	10

TABLE OF FOOD VALUES

5% (2x)	10% (x)	15% (2/3x)	20% (½x)
Asparagus	Applesauce (unsweetened)	Apple	Banana
Bamboo Shoots	Apricots (fresh)	Apple Juice	Baked beans
Navy bean sprouts	Artichokes	Bean soup (canned)	Lima beans
String beans	Asparagus soup (canned)	Blueberries	Cherries
Beet greens	Beets	Clam chowder (canned)	Corn
Broccoli	Brussels sprouts	Cheries (sour)	Figs (fresh)
Cabbage	Blackberries	Kumquats	Grape juice
Cauliflower	Carrots	Grapes	Parsnips
Cantaloupe	Cider	Loganberries	Macaroni (cooked)
Celery	(Coca Cola)	Mangos	Peas
Chard	Dandelion greens	Mulberries	Pickles (sweet)
Chicken soup (canned)	(Ginger ale)	Nectarines	Potato
Cucumber	Grapefruit	Papaws	Prunes (fresh)
Eggplant	Grapefruit juice	Pears	Rice (cooked)
Endive	Lambsquarters	Pineapple (fresh)	
Fennel	Leeks (raw)	Pineapple juice (unsweetened)	
Honey dew melon	Lemon	Plums	
Kale	Lemon juice	Raspberries	
Kohlrabi	Limes	Salsify	
Lettuce	Onions		
Muskmelon	Oranges		
Mustard greens	Orange juice		
Peppers	Papayas		
Pumpkin	Peaches (fresh)		
Radish	Pea soup (canned)		
Rhubarb	Prickly pear		
Sauerkraut	Rutabagas		
Spinach	Squash (winter)		
Squash (summer)	Strawberries		
Tomato & juice	Tangerines		
Turnips	Tomato soup (canned)		
Watercress	Vegetable soup (canned)		
Watermelon			

1 slice bread equals
- ⅝ cup 10% vegetable
- ⅝ cup corn flakes
- ⅝ cup cooked oatmeal
- 1 large Matzo
- ½ cup cooked noodles
- ½ cup Rice Krispies
- ⅝ cup Rice Flakes
- ⅝ cup Puffed Rice
- ½ cup Wheaties
- 5 pretzels
- 6 saltine crackers

2 eggs equals
- 2 ounces Canadian bacon
- ¼ cup cottage cheese & 2 teaspoons butter
- 2 oz. chicken & 2 teaspoons butter
- 2 oz. lean meat
- 2 tablespoons peanut butter
- 4 strips bacon, less ½ teaspoon butter

1 cup — 240 grams — 8 ounces
1 tablespoon — 15 grams — ¼ ounce
1 teaspoon — 5 grams — 1/6 ounce

DISCUSSION

DR. R. L. DEWEES (Wilmington): It is always a great pleasure to hear Dr. MacNeal present this subject, and it sounds certainly as simple as "A-B-C" when he does so!

I would like to emphasize just one point about his discussion of fat people and insulin. Insulin certainly is not indicated in the treatment of the obese patient with diabetes and what is more, if it is given, it is very inefficiently utilized. I am not certain of my figures, but as a resident I was told that as more and more unknown diabetics are discovered the supply and demand for insulin are getting nearer and nearer to each other, so it is conceivable that at some time there might be a shortage of insulin, especially if a lot of obese people not needing it are given insulin. I remember seeing this inefficient use of insulin in an obese person graphically demonstrated in the war, where a very large woman was taking more than 50 units a day. I am

not prepared to answer why it was given, but suffice to say, in the absence of any complications this dose of insulin was stopped without further ado, and of course nothing drastic at all happened to the patient since she was on a diet low in carbohydrate and low in calories. These people will invariably, if they adhere to their diet, lose weight down to their ideal weight and their elevated blood sugar will in a period of ten days or possibly two weeks return to normal limits again, if they adhere to their diet. It is not essential, but it is useful sometimes, to determine the renal threshold at which sugar is spilled into the urine. This can be done simply by finding out the level of the blood sugar at which sugar begins to appear in the urine.

DR. L. B. FLINN (Wilmington): I apologize—I am getting to be the perpetual recurrent discusser. But this will be short, for Dr. MacNeal has taken the subject of the non-hospital management of diabetes and wrapped it up neatly and tied a bow on it. It is the best summary that it has ever been my pleasure to hear, and it is particularly gratifying because I can find nothing about it to disagree with.

There are two short points I would like to emphasize. One, in the non-insulin requiring, so-called "mild" diabetic, it is important that you use all the persuasion possible to have that patient report for observation and follow-up, as it is the more severe and brittle type. It is the mild type which has eventually developed the more serious vascular complications. Why that should be so is not known, but I expect one reason may be that this so-called mild diabetic remains symptom-free, and develops a high postprandial blood sugar a large part of the time which may be a factor until something else is proved true as to the development of the late vascular complications.

Another point is Dr. MacNeal's emphasis on the value of postprandial blood sugars and urines, not only in the treatment of patients but particularly in the diagnosis of diabetes. It is the point which we have all been trying to drive home, particularly in the diagnosis of diabetes, in the last several years, in cooperating with the American Diabetes Association, in trying to find the unknown diabetics throughout the country.

The Committee of the State Society reported last night at the House of Delegates that it recommended this year that the main effort of the Society in cooperating with this new program to discover the unknown diabetics be directed at the medical profession, because it has become evident for the last several years that so many physicians, when a patient was reported to them as having some sugar in their urine or with a blood sugar which was a little high, requested fasting urine and fasting blood sugar on the patient and when this was normal the patient was given the impression he had nothing to worry about and could go ahead about his business.

This, apparently, has also been the opinion of the national organization; it has been felt generally that this realization has not been wide-spread throughout the profession; that it is nevertheless a part in finding the asymptomatic diabetic, to determine a postprandial urine and blood sugar.

DR. MACNEAL: Thank you, Dr. Dewees and Dr. Flinn, for your interest.

One other point that may be worth emphasis is that the obese person who develops any indication, particularly a complication accompanied by fever, such as even a small patch of gangrene on the toe, immediately becomes an insulin-requiring diabetic.

One other point about the mild obese diabetic: that is, the diabetes frequently disappear entirely when and if weight becomes normal, and that this patient then is no longer susceptible to the complications which will terminate life in the more severe and brittle type diabetic.

Thank you again for the opportunity to speak for the Society.

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PSYCHIATRIC CONSULTATIONS IN A GENERAL HOSPITAL

SANFORD G. ROGG, M. D.,*

FOREWORD

A growing trend is evident in psychiatric orientation, particularly within the Veterans Administration where it is felt that psychiatry merits a closer linking with both the general field of medicine and the community from where its patients come. With this in mind the general hospital of the Administration is truthfully becoming general in that it offers to patients treatment facilities under one roof for most of the ills to which they fall heir. In fulfilling this urgent need of incorporating psychiatric sections in all hospitals possible, relatively untouched fields for observation and study become apparent. This brief paper is simply some remarks arising from my interest in the patients who, while presenting themselves for treatment other than psychiatric, were referred to me for personality difficulties. Close liaison with the other sections of the hospital has allowed them to freely utilize me as they so desire, and also has permitted me to be of assistance to them. With interlacing of ultimate goals, benefit for the patient becomes more obtainable where the major branches of medicine are brought into closer physical relationship, each with the other.

In order to furnish the reader with an adequate and expressive picture, underlying the background of this report, and also to fully outline the boundaries under which it was written a few words of explanation, in general, would appear to be in order.

The Wilmington Veterans Hospital is located in Wilmington, Delaware. It is a new building opened in March of 1950, having a 300 bed capacity for the treatment of Veteran patients. It is staffed by an alert, interested group of physicians, most of whom have had military service and who subsequently decided to specialize in their various fields of medicine and surgery. My function here is to organize and maintain a Neuropsychiatric Service and Mental Hygiene Unit. A subsidiary activity and corollary of any service, naturally, is that it act in a consulting capacity for the other services of the hospital. It is of this ancillary function that I am going to talk in this paper, and the reports furnished below concern only cases which were referred to me for psychiatric consultation from the other services of the hospital. An important part of a consulting service as it relates to the integrated functioning of the hospital naturally depends on the establishment of a good rapport with the other services. In addition to the many intangibles involved in such a situation there are the concrete factors of talking the language of the surgeon and internist, of rendering reports not in esoteric psychiatric terminology, but in such a way that the doctor who does not have a specialized psychiatric training can read and understand what was being said. To attempt to answer, if honestly possible, the questions in the referring doctor's mind regarding his patient and to help him in his task of diagnosing and treating the veteran.

The patients who enter our hospital give an unusual opportunity for observation since it is about five years on the average that most of them have been discharged from military service. A good number have been hospitalized more than once and well studied from many aspects, including the important one of what sort of an individual do we have here, with what malfunctioning, needing what treatment.

As I write, I am careful with my choice of words, I do not wish to use terminology indicative of a division of an individual into parts, since I can truthfully say that I have never seen a body walking around without its mind, nor have I ever seen a mind float into my office without its accompanying body. There is in reality no such thing as a functional illness per se according to the traditional dichotomy of medicine that regards illness as either organic or functional. The individual is a whole with many very complex interrelationships regulating cellular physiology. The "functional" condition of itself is an ephemeral entity, in reality absolutely incapable of existing without an organ that is functioning, and conversely with an organ involved there must be changes within it pro-

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ducing a so-called functional state. Indeed, we in Psychiatry can also realize that even an illness existing on a high level of poor personal integration and inter-personal relationships is inextricably bound as a part of the whole individual. The illness we see is not physical or mental, but a combination of parts, each being influenced by and influencing the others. As I said in a "door-way conversation," 'yes, this patient has an ulcer but it is only the small part of the total. He really is an unhappy, frustrated, hostile person who could not well handle his strong feelings and because of this over a period of many years has finally been hospitalized.'

The experiences I quote are from a three months' period of keeping detailed records. I know that three months is really a short period for a valid statistical survey, but because of the number of cases involved (494) I felt statistical justification was present, even within this time element. The referring doctor usually sent his case to me for various reasons: (1) He felt from the beginning that although it was on a different service than the psychiatric, the case was wholly and completely one for the psychiatrist, and that a complete work-up on another service would reveal nothing. I might add that this type of referral was much in the minority. (2) Another type of case I saw was the in-between one where the doctor felt that although he could make a diagnosis, the main difficulty was concerned with the totality of the individual, not confined to a single aspect of an organ in mal-adaptation but to the rhythmicity of the whole. This is the type of case where the patient had by the use of psychological defense mechanisms diverted his personality difficulties to a level acceptable to both himself and to society as represented by his environment. This case is the one where the doctor well realized that diet, medicine, etc. were not going in themselves to effect a course for the better, since the patient had been having exactly that type of treatment for years before coming here. This is the type of case where in my recommendations I would state: "This patient has closely followed a dietary and medicinal regimen for several years. He gets no better, in fact seems to worsen. If improvement is to be hoped for, let us consider the patient, not the illness, requires help. Without aid for his emotional difficulties there is little possibility of achieving a happy ending here, little chance of swerving the worsening course of his illness, little chance of avoiding the eventual ending of an individual so mal-adapted to his environment that he no longer can effectively function."

Some of the patients I saw were extremely resentful and hostile, reacting strongly to the idea that they should be seen by a psychiatrist, considering it a disgrace and shame on a conscious level and having many other feelings on other levels. Some of the patients as they rose to leave after my interview with them would ask: "This talk does not go on my record, does it?" Still, there were others who would ask their physicians or eagerly accept his offer to send them to see the psychiatrist. These patients had the psychological insight and personal courage to be able to allow themselves to openly face the reality situation in their illness after a long course of evasive maneuvers. They were able to realize that the core of their present position was based on emotional difficulties, no matter what their diagnosis or symptoms, and that only by acknowledging the facts as they inalterably presented themselves was help possible. This type of patient incidentally is the one I feel most suitable for therapy and most likely to benefit from it.

The table below gives in concrete form the total arrived at in this study which covered 494 admissions in a three month period.

TABLE I

Med. Adm.	Surg. Adm.	Med. Refer. % of Adm.	Surg. Refer. % of Adm.	Prev. Hosp.	W.W. I	W.W. II	Ref. for Psych. Treat.	Predominance Psych.	Neuro.	Other
213	281	48%	17%	68%	16%	84%	16%	24%	9%	67%

The above patients were admitted only to the medical and surgical services with initial medical or surgical complaints. Those that their physician felt warranted psychiatric or neurologic investigation were sent to me to be seen only in consultation. Of the cases seen by me, it can be stated with a good deal of certainty that 24% of them had a psychiatric disability to the exclusion of any other factor. The others were a mixture or pure culture of other diagnostic formulations. By mixture I mean a degree of psychiatric incapacity in conjunction with another diagnosis and due to this other diagnosis their stay on the medical or surgical service was warranted.

A break-down of the various diagnoses is furnished below of the cases that were seen in consultation by me:

TABLE II

Somatization Reaction	Anxiety Reaction	Psychoses	Inadequate Personality	Psychopathic Personality	Emotional Instability	Mental Deficiency	Epilepsy
33	12	10	6	2	1	1	1

The term somatization reaction is used above in preference to the word psychosomatic which, as has been stated, refers to a viewpoint in medicine rather than to certain specified conditions. The anxiety (since this is one of the group of psychoneuroses) is relieved in such reactions by the original impulses being channelled via the autonomic nervous system into visceral organ symptoms and complaints, thereby in the main the anxiety is itself lessened. The long continued visceral disfunction can finally eventuate in structural changes with the passage of time.

Perhaps a summary of one of the cases will demonstrate in a specific manner some of the points mentioned above.

CASE # 1

This 31 year old, white, married male, father of two children, was seen at the request of his physician for an evaluation of his psychiatric status regarding its relationship with recurrent diarrheas. This patient was born in a small seaside town. His father died while the patient was in infancy. His mother soon remarried. There is a half-brother and a half-sister of this second union. The family's economic status was extremely precarious and it was fairly common for there to be a lack both of adequate food and clothing in the household. The patient finished the seventh grade of school and then stopped because he neither had enough clothes to go properly dressed to school, and also unless he worked he would not have enough food to satisfy his appetite. As a youngster he usually worked around the docks, picking up whatever odd errand tasks he could in order to earn money. He regarded himself as a "hustler" and even at a fairly early age able to take care of himself. He feels that he got along well with everybody and presented no unusual difficulties in his environment. He worked on the docks until his entry into military service. His health was good and the patient never received medical care for any illnesses. When in military service, on the boat going overseas, the patient began having diarrhea, and was continually troubled by this, having episodes lasting anywhere from three to five days, practically every month during his Army career. The patient was never hospitalized for his gastro-intestinal complaints, but always received paregoric or bismuth from his dispensary. He did notice when having bowel movements with his diarrhea, that he usually had a cramping pain, and that at times it was difficult for him to pass stools. He also describes periods during which his bowel movements were much less than he normally was used to. The patient remarked that he was no more "nervous" than the next soldier, and felt he adjusted fairly well in service, reaching the rank of sergeant prior to discharge in 1945. Following release from military service, he obtained employment at an arsenal deactivating ammunition. This is a Civil Service job and the patient is extremely well satisfied, feeling that it offers him both security and a fairly good salary. Several times he brought out the fact that this was achieved in spite of the extremely meager education he has had. His attacks of diarrhea have continued. The most recent one was about 14 days before admission here when he began experiencing a nauseousness, diarrhea, and flatulence. The patient noticed recently that he has become a "nervous individual" and describes his nervousness as follows: "I just can't keep still, I am always on the go, much more than the other fellow. I can't sit down, I must be about doing something." He has also observed that his emotional upsets will tend to bring on a bout of diarrhea. He and his wife apparently have a fairly good relationship between themselves and there does not appear to be undue tension in his home situation. As the patient continued talking about his work he described his foreman as an extremely difficult individual to get along with. He stated it was impossible for anybody to talk sensibly and logically with this man, and for that reason the employees tend to avoid him as much as they possibly can. The patient has had a few run-ins with him, but has perceived that discretion in this case would be the better part of valor, if he desires to hold his job; therefore, he has swallowed his annoyance and adjusts with his superior on that basis.

Regarding the diagnosis of an irritable colon it is obvious that we are dealing here with a disfunction which results in either a delayed or hypermotive bowel. These two above conditions, being present at different times. Usually no definite lesion can be found allowing the physician to definitely state that an organic condition exists. Apparently the entire pathology lies in a disturbance of intestinal tone and rhythm, deviating from the normally synchronized movements which we tend to regard as a normal healthy condition. The very fact that this patient's complaints indicate both a hyperactive colon with diarrhea and a slow colon with constipation tends to indicate that the causative factors involved are concerned with a disfunctioning autonomic system. The patient's background demonstrates an individual who has never had a stable basis and secure enough environment so that his personality over its long formative period would have been able to develop into a condition approximating what we feel is normality. This patient thrown to a large extent on his own resources, while still fairly young, made for a while a fairly good adjustment as far as we are able to determine. However, with the passing of time this long continued condition of insecurity became more perceptible to him along with the anxiety, which of necessity had to be a corollary of his insecurity. The mechanism of repression kept this anxiety from being expressed as such, and caused it to appear in the guise of a somatization reaction, whose symptomatology appears both logical and well clarified.

Diagnosis: Psychogenic gastro-intestinal reaction, manifested by bouts of diarrhea, tenesmus, griping, cramp-like abdominal pains and constipation.

Recommendation: I am in complete agreement with his physician, who feels that the patient has had eight years of medication without achieving any lasting relief and that it does not appear further drug therapy will be useful. I also concur in the belief that psychiatric help is indicated.

A discussion has been given above of a psychiatrist seeing cases solely in consultation for the medical and surgical departments of a hospital. These cases were usually referred to him when the patient's physician felt that emotional factors played a role to a large extent in his condition. Two statistical tables have been included and a brief summary of one case given. The psychiatrist with his opportunity of obtaining an inclusive picture of the individual quite often can help his colleagues in the other branches of medicine regarding their diagnosis and treatment of patients. This is quite a divergence of viewpoint from the older concept with which the other branches of our profession have tended to regard us. It does represent, however, I feel, a very practical and useful aspect of what can be offered when the patient is regarded as a complete entity.

ENDOCRINOLOGY IN GYNECOLOGICAL PRACTICE*

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Endocrinology has become a special division of medicine only in the past ten years and no branch of medicine has grown so quickly or provided such opportunities for scientific investigation. Though the growth of this specialty has been phenomenal, the science of endocrinology is still in its infancy.

To substantiate my last statement let us briefly review some of the highlights of this science. In 1893, dessicated thyroid was first used in the treatment of myxedema, but it was not until 1926 that thyroxine was produced synthetically. Insulin was isolated from the pancreas in 1922, estrogenic preparations appeared on the market about 1932, and testosterone was not discovered and produced synthetically until 1937. So from the preceding remarks we can see how new the science of the endocrine system really is.

Rather than attempt to cover all of the endocrine glands, I shall only briefly mention the advances made in their respective fields.

First, the chief gland of internal secretion, the pituitary. The chief hormones of the pituitary are derived from the anterior lobe and consist of the following: (1) the growth hormone; (2) follicular stimulating hormone; (3) the lutenizing hormone; (4) thyrotropic hormone; (5) the adrenocorticotropic hormone; and (6) proclactin. The hormones of the posterior lobe are not too important at the present time. The thyroid has shown the results of investigative influence under three main headings: (1) anti-thyroid drugs (propylthiouracil); (2) radioactive iodine; (3) protein-bound iodine. The use of radioactive iodine in the treatment of hyperthyroidism has shown excellent results. The knowledge of the adrenal gland has increased tremendously especially between the interrelationship of the pituitary and the adrenal. The adrenal has three important functions: (1) the control of sodium and potassium metabolism; (2) conversion of protein to carbohydrate; (3) the production of androgen and estrogen. Cortisone or compound E is the newest hormone to be extensively investigated.

The testes have not produced any new hormones, but knowledge has been gained about their use, especially as an aid to spermatogenesis and their use in gynecology.

The pancreas and gastro-intestinal hormones have produced nothing extraordinary.

The ovary produces estrogen and progesterone and their relationship to other endocrine glands has been enhanced.

This review has been brief but it has brought out the chief advances in endocrinology up to the present time.

To return to my original topic, I shall discuss the main endocrine glands and their relationship to gynecology.

The thyroid gland shows a definite interrelationship with the ovary but the exact mechanism is unknown. By the evidence gathered, large doses of the thyroid hormone depress the ovary but small doses stimulate it.

Dessicated thyroid, as previously mentioned, is one of the oldest hormones and probably the most commonly used today. There is definite danger in prescribing thyroid extract because one can develop thyroid addiction. It

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has been shown that the patient with a normal functioning thyroid is the one who can tolerate the largest dosage without ill effects. The hypo or hyperthyroid patient can only tolerate a small amount (1½ grains q.d.) of the hormone. Thus, by giving thyroid extract to the normal individual, a pharmacologic hypothyroid state can be produced.

Before administering dessicated thyroid a definite diagnosis of hypothyroidism should be made by clinical as well as laboratory methods. The dosage should be low at first even in severe cases and increased at 3 to 4 week intervals until a satisfactory level is reached. The action of this hormone is cumulative and no BMR is accurate until 2 months after cessation of therapy. It should be stressed that thyroid extract be taken orally as injections have no superior benefit.

Hypothyroidism will produce both amenorrhea and menorrhagia, but the latter is more common. Hypothyroidism usually produces amenorrhea either by inhibiting the ovary directly or indirectly through the pituitary. The treatment of hyperthyroidism is undergoing modification but still is chiefly surgical. The use of anti-thyroid preparations reduces the toxicity and makes surgery safer. Radioactive iodine may eventually supplement or replace surgery in the treatment of this condition. In pregnancy, the treatment of choice is surgery.

In sterility and habitual abortion where no hypothyroidism exists prescribing small amounts of dessicated thyroid has been helpful. In menstrual disorders, it has relieved some conditions (dysmenorrhea, menorrhagia) probably on the basis of raising the general metabolism of the body.

The next important ductless gland is the ovary and to understand the action of its hormones it is necessary to know the process of menstruation. The old theory of menstruation has been modified today so that we know both estrogent and progesterone however minute are necessary in both proliferative and secretory phases for normal cycles. Of course, a normally functioning pituitary is necessary to produce the ovarian hormones.

There are two main types of estrogens, natural and synthetic. The advantage of natural estrogen is that it is better tolerated, has better metabolic action, but is more expensive than the synthetic type. Progesterone is produced by the corpus luteum and there is no synthetic product.

The main uses of estrogens are:

1. Amenorrhea of the physiologic type where the anatomy is normal. This type of therapy is usually given in cyclic fashion either alone or in combination with progesterone.

2. Functional uterine bleeding is also treated with estrogens alone or in combination with progesterone and androgens.

3. The climacteric or menopause—the treatment of the symptoms of the menopause with estrogens has been abused more than any other condition in gynecology. Very seldom is it necessary to prescribe hormones for this condition and when necessary the dosage should be small and of short duration. Many patients have been treated for years for the climacteric which has been prolonged only by the continued administration of estrogens.

4. Post-partum mastodynia has been treated by estrogens but the rational is not clear and it does not seem to aid strikingly in the reduction of lactation. Simple binding of the breasts usually suffices and does not endanger the patient with future menorrhagia.

5. Prostatic carcinoma has been treated mainly with Stilbesterol and seems to have its chief therapeutic value in reducing pain and metastatic osseous growths. Danger of feminization can occur if the dosage is not carefully regulated.

6. Threatened abortion has been treated in the past few years with increasing weekly doses of Stilbesterol on the assumption that the Stilbesterol produces progesterone.

7. Dysmenorrhea has been treated by the use of estrogens on the theory that only ovulatory cycles produce pain and by inhibiting ovulation, no pain will result.

Progesterone has been used in a wide variety of conditions but is expensive and its therapeutic value questionable. In habitual and threatened abortion, its benefit seems to be equivocal and is rapidly being abandoned. Its use in the treatment of amenorrhea has already been mentioned in connection with estrogen. The greatest value of progesterone therapy has been in functional uterine bleed-

ing. If any meno-metorrhagia is present, the diagnosis should be proved pathologically as well as clinical to be on a functional basis before any hormone therapy should be instituted. Once the diagnosis is established, this condition can be treated in several ways. Estrogen alone or in combination with progesterone has already been mentioned. Progesterone administered for 5 days in cyclic fashion produces amenorrhea only to be followed by withdrawal bleeding 1 to 4 days after cessation of therapy. This bleeding represents the so-called "medical currettage". Recently the combination of estrogen, progesterone and testosterone has been advocated in this condition with a high rate of cure, withdrawal bleeding also occurs with this type of therapy. Experimental work is now being done with progesterone in late fetal death and the toxemias of pregnancy based on a lowered pregnandiol excretion.

The use of androgens in gynecology is becoming more prevalent each year. There are over 40 male sex hormones but the most potent are testosterone propionate parenterally and methyl testosterone for oral administration. The propionate is approximately 3 to 5 times as potent as the oral type. The dosage of androgens must be carefully regulated and individualized in females to prevent masculinization. The main indications for androgenic therapy in females are:

1. Functional Uterine Bleeding—the therapy has already been mentioned.

2. Primary dysmenorrhea—the rational of this type of therapy is probably on the basis of inhibiting the ovary and preventing ovulation. The results are encouraging but depend a great deal on the psychogenic background of the individual.

3. Endometriosis—this condition is relieved by the direct action of androgen on the ovaries causing regression in the ectopic endometrium. Many times this condition prevails without subjective symptoms and no treatment is needed. Androgen therapy should be used in young women who have had conservative operation for endometriosis but still have residual areas remaining in the pelvis. It has a definite place in the pre-operative management when there is definite bowel involvement.

4. Carcinoma of the Breast—the theory that carcinoma of the breast was stimulated by estrogens brought about the use of androgens in this condition. Experimental work is still being done on the use of androgens in breast cancer but some tentative conclusions have been reached. (A) Androgens may be used as palliative agents for advanced breast cancer in women at any stage of life (B) Subjective improvement occurs more frequently than objective (C) Best results are derived in osseous metastasis but no effect is produced on soft tissue growths. Paradoxically estrogens have also been used in the treatment of breast cancer but only in postmenopausal women. If estrogen is given to women with breast malignancy in the pre or menopausal group, acceleration of the neoplasm occurs.

5. Menopause—this condition is aided by testosterone by relieving the vasomotor symptoms and inhibiting the estrogens. It also raises the protein anabolism and has a definite psycho biological effect.

6. Frigidity—this condition is improved by the administration of androgen because it causes an increased susceptibility to psychic stimulation and increased sensitivity of the genitalia.

7. Post-partum Mastalgia—testosterone decreases the engorgement by reducing the vascular stasis and intestitial fluid.

8. Malnutrition and Osteomalacia—these conditions are frequently seen in pre as well as postoperative states and because of the protein anabolic effect, testosterone improves these conditions.

Finally, we come to the master gland of the endocrine system, the pituitary. For years the prevalent opinion was that the pituitary controlled the secretions of the other endocrine glands but today that hypothesis has been modified. We believe the pituitary to act as a moderator or proctor over the hormones of the other endocrine glands but not to control their production.

The use of the hormones of the pituitary is limited for several reasons. First, the source of human pituitary extracts is practically unknown and certainly not available for clinical use. The hormones produced commercially are of animal origin and cause antigen-production in the human thus reducing their effectiveness. The chief hormones

of the anterior lobe of the pituitary used in gynecology are the gonadotropins.

Unfortunately, the pituitary gonadotropin cannot be produced from the human; however, experimental evidence has shown this hormone to be present in the urine of postmenopausal and castrated women. The manner in which the gonadotropin can be extracted from the urine in pure form is too expensive and complicated to be of clinical value. The main use of the pituitary gonadotropin is in amenorrhea in stimulating the ovary and many times it has produced menstruation. This hormone is definitely a follicular stimulating one and has no value in producing ovulation. The other gonadotropin which is found in the urine and placenta of pregnant women is the chorionic or leutotropic hormone. It is the hormone responsible for the positive pregnancy tests and a false positive may be obtained by a sufficient dosage of this hormone injected into a woman. This hormone is definitely leutotropic and produces an excessive excretion of pregnandiol in women. Chorionic gonadotropin has its chief value in treating amenorrhea and anovulatory menstrual cycles in combination with the pituitary gonadotropin. This type of therapy is substitutional and rarely curative but sometimes does produce normal menstruation.

SUMMARY

The latest advances in endocrinology have been listed and the controversial subjects involved have been omitted or only briefly mentioned. The main endocrine glands and their hormones used in gynecology have been reviewed. Hormone treatment, it must be remembered, is substitutional and not curative therapy. The results of hormone therapy in the treatment of metabolic disorders are encouraging but more cures will be achieved as the knowledge of the endocrine system is unfolded.

TRACHEOTOMY IN POLIOMYELTIS

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Tracheotomy was first used in poliomyelitis[1] in pharyngeal paralysis for the prevention of: 1. cyanosis; 2. apprehensiveness; 3. choking attacks; and 4. aspiration of secretions into the bronchial tree.

Tracheotomy has been done as a prophylactic procedure[2] to prevent: 1. anoxia; 2. atelectasis; 3. pulmonary edema; 4. pneumonitis; 5. acute laryngeal spasm; and 6. suction of secretions in the bulbar patient.

Tracheotomy has been performed in bulbar poliomyelitis with respiratory difficulty[3] which was: 1. not relieved by postural drainage; 2. not relieved by aspiration of secretions; 3. unable to swallow throat secretions; 4. unable to cough because of loss of the gag reflex of the pharynx; 5. unable to cough because of chest paralysis; 6. unable to talk because of vocal cord paralysis; and 7. a possible candidate for the respirator—purely a prophylactic measure.

The only true physiological indication for tracheotomy is paralysis of the larynx and the vocal cords[4, 5, 6]; this condition produces an upper respiratory tract obstruction. The early accumulation of oral secretions in the retropharynx is not an indication because this condition may be managed successfully with adequate experienced medical and nursing personnel. In the absence of experienced personnel the necessity for tracheotomy must be decided upon as the emergency arises.

The technique for tracheotomy[7, 8, 9] should be carefully planned, performed by an experienced surgeon, and should take into account the following points: 1. if the patient is in the respirator, keep him out of the machine with the aid of the Electro Phrenic Respirator or with an intermittent positive pressure machine; 2. insert a bronchoscope and do the operation over the bronchoscope; 3. give curare[10] to relax neck muscles so that the head can be freely movable; 4. endotracheal anesthesia and oxygen may be administered; 5. the second tracheal ring is cut; 6. use the largest tracheotomy tube possible for the size of the patient; the larger tube facilitates the flow of oxygen, produces less crust formation, and there is less trouble with obstruction; 7. humidify the air; 8. have constant experienced nurse to suction the tube and the pharynx of the patient in order to eliminate the passage of salivary secretions down the oropharynx into the trachea; 9. give oxygen thru the tracheotomy tube, 2-3 liters per minute, thru

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water; 10. feed patient intravenously with sufficient caloric intake; give blood transfusions and protolysates; 11. remove tracheotomy tube as soon as possible.

Opinions differ as to the life-saving merits of tracheotomy because of the many difficulties and complications which arise following this procedure in acute poliomyelitis. The most important objections may be outlined as follows: 1. the bulbar poliomyelitis patient is already weak and devitalized when another burden and fear of the tracheotomy are added; the loss of the power of speech add to the apprehensiveness; 2. there is some difficulty in feeding the patient by mouth while the tube is present. Gavage has its dangers of irritation and producing regurgitation of stomach contents into the trachea; 3. special equipment and nursing care are needed for the administration of humidified air, oxygen and for suctioning. Children must be kept well restrained in order to prevent them from pulling the tube out; 4. with good medical and nursing care the power of swallowing returns within four to seven days in most patients. The return of swallowing with tracheotomy takes twenty-one days or longer; 5. constant experienced nursing care around the clock is necessary to avoid sudden suffocation due to obstruction of the tube, since the patient cannot call for help. Suction of the pharynx must still be continued to prevent saliva from entering the treachea and lung. Administration of oxygen and suction of secretions is difficult to carry out efficiently thru the tracheotomy tube; 6. there is a frequent incidence of crust formation in the trachea by the tube; this is uncomfortable and reduces the size of the airway. The required constant suctioning of the trachea by a catheter produces trauma, scarring, and secondary infection. Stenosis of the trachea may require prolonged treatment for dilatation. Delayed healing of tracheotomy wounds is not frequent but it may add to the discomfort of the patient; 7. repeated bronchoscopy may be necessary thru the tracheotomy opening if obstruction cannot be relieved by suction; 8. atelectasis, pneumothorax, pulmonary emphysema, pulmonary edema, and pneumonia are frequent complications following tracheotomy; 9. there is always the inevitable incidence of surgical risk; and 10. actually the mortality of bulbar poliomyelitics has not been reduced by tracheotomy; in tracheotomized patients, the mortality has been from 40% to over 50%; it is stated that many of the patients were saved by tracheotomy in instances where nursing care was inadequate to care for the emergency needs of the bulbar patient. There is no question that tracheotomy performed where obstruction of the air way cannot be relieved by other methods is life saving. In our opinion good medical and nursing care by specially trained personnel will save more lives in bulbar poliomyelitis than any surgical procedures.

Since 1942 67 bulbar poliomyelitis patients have been treated in the Doris Memorial Contagious Unit of the Wilmington General Hospital. Thirteen, or 20% of these, died due to involvement of the respiratory center. These cases are tabulated (Table I) in order to show and stress the lapse of time between onset, admission to the hospital, and death. Of the remaining 54 cases in this group, 26 had severe involvement with complications, but recovered without the use of tracheotomy or respirator; the remaining 28 patients had moderate involvement and they all made an excellent recovery.

TABLE I

BULBAR POLIOMYELITIS DEATHS

No.	Sex	Age	Lapsed Days Onset to Adm.	Involvement	Lapsed Days Adm. to Death
1.	F	39	7	Resp., All extremities	2
2.	F	29	2	Respiratory	1
3.	F	9	4	Respiratory	1
4.	M	12	1	Resp. Center All extremities	15
5.	F	19	5	Resp. Center	1½
6.	M	4	1	All extremities Resp. Center	1
7.	F	39	3	L. Upper Ext. Both Lower Ex. Face, Swallowing	2½
8.	F	8	4	Encephalitic Resp. Center,	1
9.	M	33	8	Face, L. Lower Ex. Resp. Center	2
10.	F	19	7	Both Lower Ex. Resp. Center	2
11.	M	11	6	All Extremities Resp. Center	5
12.	M	6	1	All Extremities, Circ. and Resp. Center	2
13.	M	17	1	All Extremities Resp. Center	4

Note that five patients expired within 24 hours, and four within 48 hours of admission.

SUMMARY

Tracheotomy in poliomeylitis is discussed. Its indications, technique, and disadvantages are outlined. A summary of our experience with bulbar poliomeylitis without tracheotomy is presented.

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TUBERCULOSIS TODAY

G. TAGGART EVANS,*
Wilmington, Del.

The spectacular decline in the tuberculosis mortality rate from the second cause of death in 1900 to the seventh cause in 1940 led some of the most conservative scientists to predict the virtual eradication of the disease by 1950. This has not been the case.

Tuberculosis authorities estimate that there are 500,000 men, women, and children with tuberculosis in the country. The disease of half of them has been detected. The other half—the hidden 250,000 cases—represent people who are losing their own health and may be infecting others. They must be found, diagnosed, and put under treatment before the battle against tuberculosis can be won.

For it can be won. *Tuberculosis can be cured.* Bed rest, preferably in a tuberculosis hospital or sanatorium, is the imperative first step. Since the disease can be treated successfully in any climate, the patient need not leave his family and "go West" as in the old, uninformed days. He can go to a hospital near his home, within visiting distance of his relatives and friends.

Bed rest in a good tuberculosis hospital may be enough to cure his tuberculosis. But certain types of the disease may not heal completely on bed rest alone. In those cases, rest may be combined with drugs or surgery, or both.

Streptomycin, developed from a soil organism, was the first drug to offer real promise in the treatment of tuberculosis and is still the drug of choice.

But streptomycin is not a *cure* for tuberculosis. Nor is its use always advisable. What the scientists are seeking is the ideal drug which would bring results rapidly, yet be safe, and without such uncomfortable side effects as dizziness, nausea, and deafness. It should not favor the building up of resistance by the tuberculosis germ, as does streptomycin. When this happens, the drug is no longer effective. To combat this difficulty, streptomycin is usually given in combination with another drug. One of the most successful is para-aminosalicylic acid, PAS for short. PAS seems less successful than streptomycin in suppressing tuberculosis. But it is capable of inhibiting the growth of the tuberculosis germs which have become resistant to streptomycin.

Certain types of tuberculosis, especially those with lung cavity, may not heal completely on bed rest and drugs alone. In those cases, additional relaxation must be given by some form of "collapse therapy".

These range from the relatively simple temporary collapse measures, such an pneumo-

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thorax and pneumoperitoneum, to permanent collapse of the diseased area of the lung by thoracoplasty.

In cases which cannot be controlled by the simpler collapse methods, resort is made to more radical lung surgery, such as lobectomy, segmental resection and pneumonectomy. Under ideal conditions in the hands of a skilled operator, removal of lung tissue now carries little more risk than the removal of segments from the stomach or intestines.

New drugs and new techniques make a good start in conquering tuberculosis. But no specialist is entirely satisfied with the status of surgery or chemotherapy for this disease. Medical research is being sponsored by the U. S. Public Health Service and other official agencies, by the voluntary tuberculosis associations, by hospitals and universities, by industry and private foundations. No organization is more active in this respect than the National Tuberculosis Association and its 3,000 affiliated associations, who receive their financial support from the annual sale of Christmas Seals.

Since 1907 approximately $265,000,000 has been raised by the sales of the familiar seal bearing the double-barred cross. This year, at least one per cent of every 1951 Christmas Seal purchase will be used for research against tuberculosis in the most extensive medical and social research program in the history of the National Tuberculosis Association. The work of 35 investigators in 14 states and the District of Columbia will cover every aspect of the disease from a better understanding of its cause to better methods of treatment.

These studies are being carried on in the laboratory and in the hospital. Among the tools are the microscope and the test tube. Another important tool is money—sufficient funds to carry out the projects. Proceeds from the 1951 Christmas Seal drive may turn today's ideas and hopes in medical research to tomorrow's most effective measures in the prevention and cure of the disease.

It is not too much to hope that through the Christmas Seals more powerful curative agents will be discovered which will, alone or in combination with already known methods, save lives that would otherwise be lost.

SPOTLIGHT ON 1952

In a program expected to focus a dramatic, bipartisan spotlight on the major national issue of 1952, Senator Robert A. Taft, Ohio Republican, and Senator Harry F. Byrd, Virginia Democrat, will share the platform Wednesday evening, December 5, at an open meeting of the House of Delegates of the American Medical Association in the Los Angeles Shrine Auditorium.

Announcing the program recently, Dr. George F. Lull, Secretary and General Manager of the AMA, said the addresses by Senators Taft and Byrd will be carried nationwide by the radio network of the American Broadcasting Company.

The Los Angeles meeting, a special event at the Fifth Annual Clinical Session of the AMA, will be open without charge to the general public, Dr. Lull said, and is expected to attract a capacity crowd of 6,800 people. It will be attended by scores of Hollywood celebrities, political figures, public officials, and civic leaders.

"Senator Taft and Senator Byrd will have complete freedom to discuss both domestic and international issues as they view them", said Dr. Lull. "We have reason to believe that both men will deal with the major issues of the 1952 political campaign, including the issue of socialized medicine and the over-all trend toward State Socialism in this country.

"The American Medical Association is a nonpartisan, professional organization with a sincere concern over the basic issues confronting the American people. We believe that those issues transcend all political party lines as they stand today. We therefore consider it highly fitting to provide this forum for two outstanding leaders in the two major parties. We believe that what Senators Taft and Byrd say on December 5 in Los Angeles will have a significant influence in shaping the great debate of 1952."

The public meeting will start at 7:00 p.m. in Los Angeles. The ABC radio broadcast will be heard at 9:00 p.m. local time in all parts of the country except in the eastern time zone, where it will be scheduled for 10:00 p.m.

+ Editorials +

DELAWARE STATE MEDICAL JOURNAL

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Vol. 21 November, 1951 No. 11

One Man We Don't Want

Governor Earl Warren of California, speaking on a CBS radio broadcast on November 4th, again advocated the enactment of a system of Compulsory Health Insurance.

Warren, three times defeated in efforts to inaugurate such a system in California, made it clear that he now favors a system of Government-directed Medical Care for all the American people.

The Governor denied that his program was Socialized Medicine, but the plan he has advocated in California closely parallels the program of Socialized Medicine advocated by President Truman and Federal Security Administrator Oscar Ewing.

The full text of Governor Warren's statement follows:

"It is not sufficient to say that America has developed the finest medical care in the world, even though this is true. We still must find a way to make it accessible to all of our people.

"The well-to-do can pay for good medical care; the indigent receive it from public agencies and through the charitable work of the doctor; but the self-reliant worker, the man in the average or lower income bracket who contributes so much to building our country, and whose greatest ambition and hope is to raise a good American family, cannot bear the financial catastrophe of serious illness.

"I have advocated for California a program of pre-paid medical care as a possible solution. The proposal has been called socialized medicine by some who are opposed to it. It even has been given the ugly name of communism by others. It is neither. Nor is it statism as practised in Germany or socialism as practised in England.

"I have never been and am not now in favor of socialized medicine. I do not believe in socialism, but I do believe in social progress, which has been the hallmark and the glory of the American nation from its beginning.

"I am convinced we will enter upon a new era of progress in the cause of health when we make it possible for every one of our people to protect himself and his family from the economic disaster of backbreaking hospital and medical bills.

"I believe it is the responsibility of the states to undertake to help doctors, hospitals and the public they serve in the solution of what, up to the present time, has been an insoluble problem. I have never held out my proposal as the only solution. It is my proposal until someone offers a better one.

"I am firmly of the belief, however, that our American system is sufficiently adaptable to make possible the solution of the problem of medical care without doing violence to the political, economic or professional concept of all the people who are sincerely interested in the problem."

As you undoubtedly know, Governor Warren has been defeated repeatedly in attempts to secure the enactment of a program of Socialized Medicine in the State of California, but he now makes it clear that he believes such a program should encompass all the American people. It is significant that he made this statement only a few days before announcing his candidacy for President.

You will note that Governor Warren, in common with President Truman and Federal Security Administrator Oscar Ewing, repudiates the term "socialized medicine", while warmly embracing the substance. That has become accepted practice among those who seek a politically-dominated medical system, however, and no one should be misled by it.

Governor Warren, in his most recent statements, as in the past, has completely ignored the tremendous strides made by voluntary health insurance in providing prepaid medical care for the American people. This is consistent with his position throughout the long fight in California on this issue, for he has always either ignored or belittled the progress of the voluntary systems, despite the fact that there are now more Californians enrolled in voluntary health insurance plans than

Warren promised to provide for under his scheme of compulsory health insurance. Even coverage for catastrophic illness, to which Warren refers in his CBS statement, now is provided by California Physicians Service in his own state, but the Governor, for reasons best known to himself, refuses to admit that anyone other than politicians can provide the people with adequate prepaid medical care.

On the issue of compulsory health insurance, Governor Warren is in the Truman-Ewing camp just as surely as if he were formally enrolled in it which, incidentally, President Truman has indicated he should be.

In reply to Warren's statement, Dr. John W. Cline, President, AMA, and Dr. Elmer L. Henderson, Chairman, Coordinating Committee, AMA, make a joint reply, in part, as follows:

We have heard before now many criticisms in Delaware of Governor Warren's attitude toward medical care, and while perhaps it was not the major reason for the defeat in 1948 of the Dewey-Warren ticket, it was undoubtedly an important factor. Since Warren's recent statement indicates that he has learned absolutely nothing from the exposes of the tendency of the present administration toward socialistic doctrines and a socialistic state, we can say, without fear of contradiction, that as a candidate for the Presidency of the United States, regardless of his political party or affiliations, the doctors of Delaware want no part of Earl Warren. What the doctors of this, the first state in the American Union, feel about Warren as an anti-private-practice candidate is certainly shared by the doctors in every other state of the Union, especially his own, California. In other words, it is safe to say that the doctors of America want no part of Earl Warren on any ticket.

BOOK REVIEWS

Who Walk Alone. By Perry Burgess. Pp. 312. Cloth. Price, $3.50. New York: Henry Holt and Company, 1950.

This is the real story of a sufferer of Hansen's Disease (leprosy).

A special edition of this very enlightening book has been distributed by the Leonard Wood Memorial for the Eradication of Leprosy for the purpose of interesting readers in the plight of the lepers, and the scientific efforts being made to solve one of the oldest diseases.

The main character in the book is an American soldier who served in the Spanish-American War in the Philippines and who many years after he returned home became a leper. As his trials and tribulations are unfolded one realizes that even to-day people in general have a horrible fear of associating with any one diagnosed as a leper. The disease is far less dangerous to public health than many other diseases and those suffering from it should be treated as sick people, not as criminals. The disease does not kill the patient but often causes certain deformities which disable him.

There are two main types of the disease: the tuberculoid, which is not infectious; and the lepromatous, which is considered open and infectious. In this latter type the bacilli are present in nasal discharges and scrapings from the skin; spread is possible thru inhalation or swallowing of the germs, or the germs may enter healthy persons thru wounds in the skin. It is usually contracted in Childhood but adults can also contract it. A higher attack rate among males is the rule for the lepromatous form of the disease. A very large proportion of patients bear little or no outer signs of their affliction.

It is not generally known that Hansen's disease is not inherited and is not congenital. Doctors, nurses, technicians and other personnel working in leprosaria rarely contract this fearful disease; and infection of husband or wife from an infected spouse is rare.

Leprosy is common in tropical and subtropical areas with residual areas of low prevalence in cooler regions. Some cases arise in Florida, Louisiana, Texas, and Southern California. There are about three to five million cases in the world.

Physicians will find this book very informative as far as the life of a sufferer of Hansen's disease in a leper colony is concerned. It will also aid in sharpening one's suspicions for an early diagnosis in such a patient because, as the story brings out so well, a patient wanders from doctor to doctor and from one hospital to another without a diagnosis of this old dis-

ease which has horrified people for centuries all over the world. A skin biopsy of the anesthetic lesions together with a nasal smear examined for the acid fast bacillus of Hansen will usually furnish the diagnosis.

The attention which is now being given to scientific studies of the nature and control of Hansen's disease is the most encouraging factor. The Leonard Wood Memorial for the Eradication of Leprosy depends entirely on contributions from the general public for its financial support.

A Text-Book of X-Ray Diagnosis. By British Authors, in 4 vols. Edited by S. Cochrane Shanks, M. D., Director, X-ray Diagnostic Department, University College Hospital, London; and Peter Kerley, M. D., Director, X-Ray Department, Westminster Hospital, and Radiologist, Royal Chest Hospital, London. Published by W. B. Saunders & Co. Philadelphia and London, 1951.

This is a second edition of a standard English reference in x-ray diagnosis. The first edition was by S. C. Shanks, P. Kerley and E. W. Twining, published in 1938 and consisted of three volumes.

The present edition has been arranged in four volumes because of the additional material presented, as follows:

I—Head and Neck; II—Cardiovascular and Respiratory Systems; III—Alimentary Tract, Biliary Tract, Abdomen, Obstetrics and Gynecology, Urinary Tract; IV—Bones, Joints and Soft Tissues.

The rearrangement of material should interest many specialists who would be interested in only one branch of diagnostic roentgenology.

The section on Heart has been increased about 50% in size and numerous new illustrations have been added, including several sketches in color. Sections on Angiocardiography and Electrokymography have been added but are limited in their scope of discussion.

The volume on Abdomen has been changed very little, but a new section on the Alimentary Tract of Infants and Children has been added. In this volume the section on Radiology in Obstetrics has been greatly extended and is quite comprehensive, including a discussion of all the major techniques for examining the maternal pelvis.

In the first volume the discussion on Cerebral Angiography has been greatly improved and enlarged.

I feel that this is one of the best sets of reference books in roentgenology and should be a part of the library of every roentgenologist. The individual volumes should be of great interest to other specialists.

Technical Methods for The Technician. By Anson L. Brown, M. D. Fourth edition. Pp. 784, illustrated. Fabricoid. Price $10.00. Columbus, Ohio: Anson L. Brown, Incorporated, 1951.

This book is designed as a work book for laboratory training students of the high school level. In an attempt to be simple the author has failed to produce a well balanced book. His approach is so elementary that the results are nothing more than a cook book.

The chemistry procedures are out-dated and incomplete. Hematology is inaccurate and elementary and the terminology is out-dated. Bacteriology is ill planned and important methods are only alluded to. The serological procedures appear adequate but are not entirely up-to-date. The blood bank section is inadequate. The histology is out of date and unscientifically presented. The book is certainly not to be recommended for a modern medical laboratory, student, or physician.

A Bibliography of Infantile Paralysis: 1789-1949. Prepared under the direction of the National Foundation for Infantile Paralysis, Inc. Edited by Morris Fishbein, M.D., Ella M. Salmonsen, and Ludwig Hektoen, M.D. Second Edition. Cloth. J. B. Lippincott Co., Philadelphia; 1951.

This is the most complete volume of references on anterior poliomyelitis. They are arranged alphabetically for each year beginning in 1789 and including 1949, with a complete index following the references. A brief abstract of each article is also given.

Perhaps the most useful section of the book is the detailed subject index which adds to the practical value of this voluminous reference book on the subject of poliomyelitis.

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An Advertisement of G. D. Searle & Co.

(The Council on Pharmacy and Chemistry of the American Medical Association has adopted the following statement of Actions and Uses and of Dosage for publication in connection with a description of Banthine Bromide for inclusion in New and Nonofficial Remedies)

METHANTHELINE BROMIDE.—*Banthine® Bromide (Searle)*

β-diethylmethylaminoethyl 9-xanthenecarboxylate bromide

Actions and Uses.—Methantheline bromide, a parasympatholytic agent, produces both the peripheral action of anticholinergic drugs such as atropine and the ganglionic blocking action of drugs such as tetraethylammonium chloride. Tolerated amounts of methantheline bromide exert side effects typical of atropine-like drugs, but cause less tachycardia, and also less postural hypotension than does tetraethylammonium chloride. Toxic doses produce a curare-like action at the somatic neuromuscular junction.

Clinical studies indicate that the drug effectively inhibits motility of the gastrointestinal and genitourinary tracts and, to a variable degree, diminishes the volume of perspiration and salivary, gastric and pancreatic secretions. It also decreases mucoprotein secretion. Like atropine, it produces mydriasis and cycloplegia when applied locally to the eye or administered systemically, but until more clinical evidence becomes available, its local use for this purpose is not recommended. The value of the drug for preventing abnormal cardiac reflexes through the vagus during thoracic surgery, or as an agent for routine preoperative medication in place of atropine, requires further investigation before final conclusions can be reached.

Methantheline bromide is indicated for clinical use whenever anticholinergic spasmolytic action is desired, provided it is not contraindicated because of its atropine-like characteristics or because of a patient's intolerance to the unavoidable side effects of such therapy. It is useful as an adjunct in the management of peptic ulcer, chronic hypertrophic gastritis, certain less specific forms of gastritis, pylorospasm, hyperemesis gravidarum, biliary dyskinesia, acute and chronic pancreatitis, hypermotility of the small intestine not associated with organic change, ileostomies, spastic colon (mucous colitis, irritable bowel), diverticulitis, ureteral and urinary bladder spasm, hyperhidrosis or control of normal sweating which aggravates certain dermatoses, and control of salivation.

Methantheline bromide produces some degree of cycloplegia and mydriasis in therapeutic doses and therefore should not be administered to patients with glaucoma. It sometimes decreases the ability to read fine print. Xerostomia (dryness of the mouth) is a common, sometimes transient, side effect. Urinary retention of varying degree may occur in elderly male patients with prostatic hypertrophy, and some patients may have difficulty emptying the rectum. Patients with edematous duodenal ulceration may experience nausea and vomiting during initial administration of the drug. These patients should take only liquids during the institution of drug therapy. All patients should be advised of the possible occurrence of side effects. Overdosage sufficient to produce a curare-like action may be counteracted by prompt subcutaneous injection of 2 mg. of neostigmine methylsulfate.

Dosage.—Methantheline bromide is administered orally or parenterally by either the intramuscular or intravenous route. Parenteral administration is not advised for patients able to take the drug orally. The average initial adult dose, oral or parenteral, is 50 mg. For patients with considerable intolerance, 25 mg. may be employed. In the management of peptic ulcer, a beginning schedule of 50 mg. three times daily before meals and 100 to 150 mg. on retiring is suggested. However, the usual effective dose is 100 mg. four times daily, although some patients may require more or less than this amount. The dosage may be increased to tolerance, using dryness of the mouth as a guide, and adjusted to meet the individual response of patients. Maintenance dosage in peptic ulcer is usually considered to be about one-half the therapeutic level. In the management of other hypermotile or hypersecretory states, the dosage should be adjusted to the smallest amount which will relieve the symptoms. When spastic conditions are secondary to inflammatory or other organic lesions, therapy directed toward the cause should be employed whenever possible.

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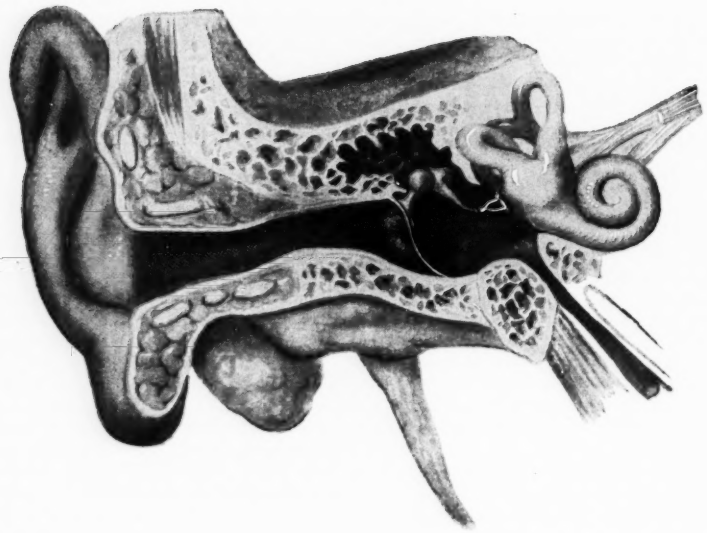

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Potterfield, T. G., and Starkweather, G. A.: J. Philadelphia General Hosp. 2:6 (Jan.) 1951.

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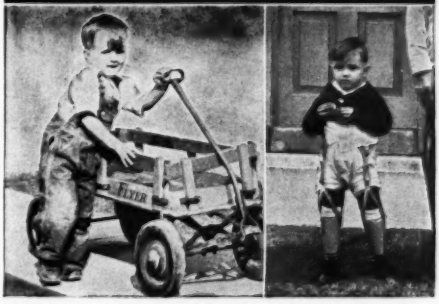

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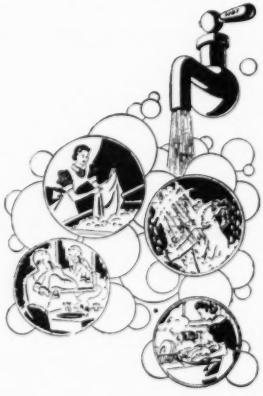

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